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### **REVISION SCHEDULE**

			Signature or Typed Name (documentation on file)			
Rev No.	Date	Description	Prepared by	Checked by	Reviewed by	Approved by
А	28/07/2020	FINAL	IC			
В	22/09/2020	FINAL - LAYOUT CHANGES	IC			
С	04/02/2021	FINAL – OBTRUSIVE LIGHTING CALCULATIONS ADDED	IC			

# KiwiRail

## Palmerston North Freight Hub - Lighting DESIGN

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# 1. Background

In conjunction with the proposed Regional Freight Hub (Freight Hub) north of Palmerston North, new lighting is required for the internal access roads, car parks and outdoor operational areas. The outdoor operational areas include the maintenance facilities, network serviced depot, log loading siding, tank siding, rail marshalling yard, container terminal and freight forwarding private sidings.

# 2. Scope

This report specifies the performance and light technical parameters (LTPs) of the lighting design required to achieve compliance with specific KiwiRail requirements as well as relevant AS/NZS standards.

Power supply requirements associated with the proposed lighting is excluded from this design report.

# 3. Applicable Lighting Levels

The standards applicable are:

AS/NZS 1158.3.1:<del>2020</del> (Part 3.1) - Pedestrian area (Category P) lighting - Performance and design requirements

AS/NZS 4282:2019 - Control of the obtrusive effects of outdoor lighting

E-ST-EL-0131 - Traction and Electrical Standard

As requested by KiwiRail the lighting for the internal access roads and car parks has been designed in accordance with the relevant parts of AS/NZS 1158.3.1; and the outdoor operational areas have been designed in accordance with E-ST-EL-0131. Spill light isolux lines have been provided (on the layout drawings) as guidance-Obtrusive lighting (spill light and glare) calculations were completed (for the closest residential buildings to the proposed Freight Hub) against the requirements of AS/NZS 4282.

### 3.1 Basis of Design -- Internal Access Roads

Based on the selection criteria from Table 2.1 of AS/NZS 1158.3.1 the lighting subcategory PR5 was applied to the internal access roads. Refer highlighted portions of the table below.

Table 2.1 from AS/NZS 1158.3.1:

LIGHTING SUBCATEGORIES FOR ROAD RESERVES IN LOCAL AREAS									
1	2	3	4	5	6				
Type of road or p	pathway	Se	election criteria	ı,b					
General description	Basic operating characteristics	Pedestrian/ cycle activity	Fear of crime	Need to enhance amenity	Applicable lighting subcategory <sup>e</sup>				
Collector roads or non-		N/A	High	N/A	PR1				
arterial roads which collect and distribute		High	Medium	High	PR2				
traffic in an area, as well as serving abutting properties		Medium	Low	Medium	PR3f or PR4				
		Low	Low	Low	PR5				
Local roads or streets		N/A	High	N/A	PR1				
used primarily for access to abutting properties,	Mixed vehicle and pedestrian	High	Medium	High	PR2				
including residential		Medium	Low	Medium	PR3f or PR4				
commercial and industrial precincts	traffic	Low	Low	Low	PR5				
preemets		N/A	N/A	N/A	PR6e				
Common area, forecourts		N/A	High	N/A	PR1				
of cluster housing		High	Medium	High	PR2				
		Medium	Low	Medium	PR3f or PR4				
		Low	Low	Low	PR5				

The lighting of the internal roads was designed to achieve the PR5 requirements from Table 3.3 of AS/NZS 1158.3.1. Refer highlighted portions of the table below:

TABLE 3.3 VALUES OF LIGHT TECHNICAL PARAMETERS FOR ROADS IN LOCAL AREAS							
1	2	3	4				
	Lig	ght technical paramete	ers (LTP)				
Lighting subcategory	Average horizontal illuminance $^{a,b}$ $\left(\overline{E}_{\mathbf{h}}\right)$ lx	Point horizontal illuminance <sup>a,b</sup> (E <sub>Ph</sub> ) lx	Illuminance (horizontal) uniformity Cat. P $(U_{E2})$				
PR1	7	2	8				
PR2	3.5	0.7	8				
PR3e	1.75	0.3	8				
PR4 <sup>d,e</sup>	1.3	0.22	8				
PR5 <sup>d,e</sup>	0.85	0.14	10				
PR6 <sup>d</sup>	0.7	0.07	10				

### 3.2 Basis of Design - Car Parks

Based on the selection criteria from Table 2.5 of AS/NZS 1158.3.1 the lighting subcategory PC3 was applied to the internal car parks. Refer highlighted portions of the table below.

Table 2.5 from AS/NZS 1158.3.1:

TABLE 2.5 LIGHTING SUBCATEGORIES FOR OUTDOOR CAR PARKS (INCLUDING ROOF-TOP CAR PARKS)							
1	2	3	4				
		Selection criteria <sup>a,c</sup>					
Type of area	Night time vehicle and/or pedestrian movements	Fear of crime	Applicable lighting subcategory <sup>b</sup>				
	High	High	PC1				
Parking spaces, aisles and circulation roadways	Medium	Medium	PC2				
Todaways	Low	Low	PC3				
Designated parking spaces specifically intended for people with disabilities	N/A	N/A	PCD				
For any designated areas for pedestrians to cross	N/A	N/A	PCX				

The lighting of the internal car parks was designed to achieve the PC3 requirements from Table 3.7 of AS/NZS 1158.3.1. Refer highlighted portions of the table below:

	TABLE 3.7  VALUES OF LIGHT TECHNICAL PARAMETERS FOR OUTDOOR CAR PARKS (INCLUDING ROOF-TOP CAR PARKS)							
1	2	3	4	5				
		Light technical p	arameters (LTP)					
Lighting subcategory	Average horizontal illuminance $(\overline{E}_h)$	Point horizontal illuminance <sup>a,b</sup> (E <sub>Ph</sub> )	Illuminance (horizontal) uniformity <sup>c</sup> Cat. P (UE2)	Point vertical illuminance <sup>a,b</sup> (E <sub>Pv</sub> )				
	lx	lx	(011)	lx				
PC1	14	3	8	3				
PC2	7	1.5	8	1				
PC3	3.5	0.7	8	_				
$PCD^d$	_	$\geq$ 14 and $\geq$ $\left(\overline{E}_{h}\right)^{d}$	_	_				
PCX <sup>e</sup>	21	5	8	_				

### 3.3 Basis of Design - Outdoor Operational Areas

The lighting of the outdoor operational areas was designed to achieve the applicable requirements from Table 6.1 of E-ST-EL-0131. Refer highlighted portions of the table below:

Table	6.1	Lighting	levels and	quality
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Type of area	Em	Uo	GRL	Ra	U <sub>d</sub>
Railway Marshalling Yards - Anywhere shunting operations are carried out	≥ 10 lux	≤ 0.40	≤ 50	≥ 20	≥ 1/5
Freight Track, short duration operations - The portion of a rail siding where loading and unloading does not occur. Rail movements are infrequent.	≥ 10 lux	≤ 0.25	≤ 50	≥ 20	≥ 1/8
- The portion of a rail freight yard where loading and unloading does not occur.  Rail movements are frequent. Road traffic and pedestrians are likely to be present.	≥ 20 lux	≤ 0.40	≤ 50	≥ 20	≥ 1/5
Railway Yards Handing Areas - Anywhere that wagons are being loaded with cranes or forklifts. This includes most of the main freight sidings and the Interisland Line terminal areas where wagons are loaded/unloaded	≥ 30 lux	≤ 0.40	≤ 50	≥ 20	≥ 1/5

# 3.4 Basis of Design - Obtrusive Lighting

1 Lux spill light isolux contour lines have been provided (on the layout drawings) to identify any residential

properties that may be adversely affected by the Freight Hub lighting.

The applicable levels of maximum obtrusive light (spill light <u>and glare</u>) is <u>and sky glow (Upward Waste Light Ratio - UWLR) are</u> based on what particular environment zone the residential properties are within. Zone A2 was selected based on low district brightness associated with sparsely inhabited rural / semi-rural areas. Refer highlighted portions of table below.

Table 3.1 from AS/NZS 4282 - Environmental Zones:

	TABLE 3.1							
	ENVIRONMENTAL ZONES							
Zones	Zones Description Examples							
A0	Intrinsically dark	UNESCO Starlight Reserve. IDA Dark Sky Parks. Major optical observatories No road lighting -unless specifically required by the road controlling authority						
A1	A1 Dark Relatively uninhabited rural areas No road lighting - unless specifically required by the road controlling authority							
A2	Low district brightness	Sparsely inhabited rural and semi-rural areas						
A3	Medium district brightness	Suburban areas in towns and cities						
A4	High district brightness	Town and city centres and other commercial areas Residential areas abutting commercial areas						

#### Spill Light:

The maximum level of spill light (vertical illuminance - Lux) <u>and UWLR</u> for Zone A2, <u>during curfew</u>, is provided in the following table:

TABLE 3.2
MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS

Zonos	Vertical illuminance levels (E <sub>v</sub> ) lx		Threshol	d increment (TI)	Sky glow
Zones	Non-curfew	Curfew	%	Default adaptation level $(L_{\mathrm{ad}})$	Upward light ratio
A0	See Note 1	0	N/A	N/A	0
A1	2	0.1	N/A	N/A	0
A2	5	1	20%	0.2	0.01
A3	10	2	20%	1	0.02
A4	25	5	20%	5	0.03
TV	See Table 3.4	N/A	20%	10	0.08

<u>change</u>

TABLE 3.3
MAXIMUM LUMINOUS INTENSITIES PER LUMINAIRE

7	Luminous intensity (I), cd					
Zone	Non-curfew L1	Non-curfew L2	Curfew			
A0	See Note	See Note	0			
A1	2 500	5 000	500			
A2	7 500	12 500	1 000			
A3	12 500	25 000	2 500			
A4	25 000	50 000	2 500			
TV	100 000	150 000	0			

NOTE: For A0, I shall be as close to zero as practicable without impacting safety considerations.

#### Glare:

<u>Ihe maximum level of glare (maximum luminous intensity per luminaire - cd) for Zone A2, during curfew, is provided in table above.</u>

# 4. Design Modelling Results

In accordance with AS/NZS 1158.3.1 and E-ST-EL-0131 illuminance and uniformity calculations were carried out for the internal access roads, car parks and outdoor operational areas.

In accordance with AS/NZS 4282 obtrusive lighting calculations have been completed to identify any residential properties that may be adversely affected by the proposed Freight Hub lighting.

Spill light or glare calculations were not carried out for any particular residential buildings, however 1-Lux isolux contour lines were provided (on the layout drawings) to help identify any residential properties that may be adversely affected by the Freight Hub lighting. Detailed calculations may be required in the future if deemed necessary.

All calculations were completed using the lighting software program AGi32, version 2.31, supplied by Lighting Analysts, Inc.

The photometric files (used in the illuminance and luminance calculations) were provided by the luminaire supplier ENERGYLIGHT Ltd.

The results are show in the drawings appended in Appendix C.

### 4.1 Luminaire and Mounting Parameters

Refer to Appendix A for details of the new luminaires and Appendix B for details of the new lighting poles. The new lighting poles shall be located where shown on the layout drawings.

The design results were achieved using a maintenance factor of 0.8, and the following luminaire and mounting parameters:

#### Type A

Luminaire: AEC Italo 1 (STANO 4000K 350mA 3M) 27W (3320 lm) LED.

Mounting: 7.3m mounting height with 0° tilt on new ground planted tapered octagonal steel lighting

pole complete with 0.9m curved outreach arm.

Type B

Luminaire: AEC Italo 1 (STANO 4000K 525mA 4M) 51W (6020 lm) LED.

Mounting: 7.3m mounting height with 5° tilt on new ground planted tapered octagonal steel lighting

pole complete with 0.9m curved outreach arm.

Type C

Luminaire: AEC Italo 1 (S05 4000K 350mA 2M) 27W (3400 lm) LED.

Mounting: 7.3m mounting height with 0° tilt on new ground planted tapered octagonal steel lighting

pole complete with 0.9m curved outreach arm.

Type D

Luminaire: AEC Italo 1 (S05 4000K 350mA 2M) 27W (3400 lm) LED (2 off).

Mounting: 7.3m mounting height with 0° tilt on new ground planted tapered octagonal steel lighting

pole complete with double 0.9m curved outreach arms.

Type E

Luminaire: AEC Italo 1 (S05 4000K 350mA 3M) 39W (4970 lm) LED.

Mounting: 7.3m mounting height with 0° tilt on new ground planted tapered octagonal steel lighting

pole complete with 0.9m curved outreach arm.

Type F

Luminaire: AEC Italo 1 (S05 4000K 350mA 3M) 39W (4970 lm) LED (2 off).

Mounting: 7.3m mounting height with 0° tilt on new ground planted tapered octagonal steel lighting

pole complete with double 0.9m curved outreach arms.

#### Type G

Luminaire: EWO R4 (Gen 3 EP09 Left / Right Optic 4000K 1800mA) 1523W (182874 lm) LED Floodlight.

Mounting: 22.078m mounting height with 5° tilt on new 22.4m (nominal) flange based tapered octagonal

steel flood lighting pole complete with 0.6m horizontal cross arm. Luminaire mounted to front

face of cross arm using proprietary over-frame bracket.

#### Type H

Luminaire: EWO R4 (Gen 3 EP09 Left / Right Optic 4000K 1800mA) 1523W (182874 lm) LED Floodlight (2 per

pole).

Mounting: 22.078m mounting height with 5° tilt on new 22.4m (nominal) flange based tapered octagonal

steel flood lighting pole complete with 0.6m horizontal cross arm. Each luminaire mounted to front face of cross arm, using proprietary over-frame brackets, to form opposing (180°) aiming

directions.

#### Type J

Luminaire: EWO R4 (Gen 3 EP09 Left / Right Optic 4000K 1800mA) 1523W (182874 lm) LED Floodlight.

Mounting: 22.078m mounting height with 10° tilt on new 22.4m (nominal) flange based tapered

octagonal steel flood lighting pole complete with 0.6m horizontal cross arm. Luminaire

mounted to front face of cross arm using proprietary over-frame bracket.

#### Type K

Luminaire: EWO R4 (Gen 3 EP09 Left / Right Optic 4000K 1800mA) 1523W (182874 lm) LED Floodlight (2 per

pole).

Mounting: 22.078m mounting height with 10° tilt on new 22.4m (nominal) flange based tapered

octagonal steel flood lighting pole complete with 0.6m horizontal cross arm. Each luminaire mounted to front face of cross arm, using proprietary over-frame brackets, to form opposing

(180°) aiming directions.

#### Type L

Luminaire: EWO R4 (Gen 3 EP09 Left / Right Optic 4000K 1800mA) 1523W (182874 lm) LED Floodlight.

Mounting: 12m mounting height with 20° tilt secured to front face of building using propriety stirrup

bracket.

#### 4.2 Maintenance Factor - Italo Luminaires

A design maintenance factor (MF) is used in the calculations to account for the combined light losses resulting from depreciation in the LED's lumen output and accumulation of dirt on the luminaire.

The MF is calculated as the product of the following depreciation factors:

(a) Luminaire Maintenance Factor (LMF): The factor selected from table B.1 of BS 5489-1 which considers the environmental zone, mounting height and cleaning interval. An environmental zone of E3/E4 was selected (corresponding to moderate/high ambient luminance areas), the mounting heights are not more than 6m and a maximum luminaire cleaning interval of 72 months (6 years or 25,200 hours operation) was selected resulting in an LMF of 0.84.

Table B.1 Luminaire maintenance factors

Environ-	Mounting height	Maintenance factor						
mental zone		Cleaning frequency 12 months	Cleaning frequency 24 months	Cleaning frequency 36 months	Cleaning frequency 48 months	Cleaning frequency 60 months	Cleaning frequency 72 months	
E1/E2	≤6 m	0.96	0.96	0.95	0.94	0.93	0.92	
E1/E2	>6 m	0.96	0.96	0.95	0.94	0.93	0.92	
E3/E4	≤6 m	0.94	0.92	0.90	0.88	0.86	0.84	
E3/E4	>6 m	0.96	0.96	0.95	0.94	0.93	0.92	

- (b) Light Source Lumen Depreciation Factor (LLD): The amount of light (lumen output) available at the end of a nominated operating period, as a proportion of the initial lumen output (when the LED was new), expressed as a decimal fraction. An LLD of 0.98 was provided by the LED supplier.
- (c) Luminaire Survival Factor (LSF): This is the expected amount of failures after 85,000 hours of operation (including electronic components, drivers, lenses, premature failures or mechanical failure). An LSF of 0.99 was provided by the LED supplier.

Table B.1 of BS 5489-1 and the manufacturer supplied data has provided in an LMF of 0.92, an LLD of 0.92 and an LSF of 0.99.

 $MF = LMF \times LLD \times LSF$ 

 $MF = 0.84 \times 0.98 \times 0.99$ 

MF = 0.815

A design maintenance factor of 0.8 was applied to the calculations.

It is important to note that the design results are based on a maintenance interval (luminaire cleaning cycle) of 6 years. At the end of 6 years the lighting should still comply with the road lighting standards (AS/NZS 1158), but the luminaires will require cleaning before the performance of the lighting installation degrades below the requirements of the standards. If the luminaires are not routinely cleaned the gradual accumulation of dirt will eventually compromise the optical performance of the installation.

### 4.3 Maintenance Factor - EWO R4 LED Flood Lights

A design maintenance factor (MF) is used in the calculations to account for the combined light losses resulting from depreciation in the LED's lumen output and accumulation of dirt on the luminaire.

The MF is calculated as the product of the following depreciation factors:

- (d) Luminaire Maintenance Factor (LMF): The amount of light (lumen output) available at the end of a nominated period (cleaning interval) where the output has fallen due to the accumulation of dirt. An LMF of 0.92 was provided by the LED supplier based on an 8 year cleaning cycle, glass visor and PMMA lens.
- (e) Light Source Lumen Depreciation Factor (LLD): The amount of light (lumen output) available at the end of a nominated operating period as a proportion of the initial lumen output (when the LED was new). An LLD of 0.99 was provided by the LED supplier based on 85,000 hours of operation and an ambient temperature of 25°C.
- (f) Luminaire Survival Factor (LSF): This is the expected amount of failures after 85,000 hours of operation (including electronic components, drivers, lenses, premature failures or mechanical failure). An LSF of 1.0 was provided by the LED supplier based on no reported failures.

 $MF = LMF \times LLD \times LSF$ 

 $MF = 0.92 \times 0.99 \times 1.0$ 

MF = 0.91

A conservative design maintenance factor of 0.8 was applied to the calculations.

It is important to note that the design results are based on a maintenance interval (luminaire cleaning cycle) of 8 years. At the end of 8 years the lighting should still achieve the maintained average illuminance, but the luminaires will require cleaning before the output of the lighting installation falls below current design levels. If the luminaires are not routinely cleaned the gradual accumulation of dirt will eventually compromise the optical performance of the installation.

### 4.4 Illuminance Design Results – Internal Access Roads and Car Parks

An illuminance based design was carried out to determine the average horizontal illuminance ( $E_h$ ), point horizontal illuminance ( $E_{Ph}$ ) and horizontal uniformity ( $U_{E2}$ ) using the lighting software program AGi32, version 2.31, supplied by Lighting Analysts, Inc.

The applicable design areas are the internal roads and parking spaces.

Design area boundaries and calculation points were established in accordance with AS/NZS 1158.2. Refer to the design results below:

Illuminance Calculation Summary Table - AS/NZS 1158.3.1:2020						
Label	CalcType	Units	Avg	Min	Max/Avg	
Access Roads	Illuminance	Lux	2.2	0.14	9.7	Cat PR5 - 0.85 Lux (Avg), 0.14 Lux (Min) and Uniformity (Max/Avg) of 10 (Max)
Container Terminal Car Park 1	Illuminance	Lux	3.8	0.8	3.1	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Container Terminal Car Park 2	Illuminance	Lux	4.8	0.8	3.3	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Container Terminal Car Park 3	Illuminance	Lux	3.8	0.9	4.0	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Freight Forwarding Car Park	Illuminance	Lux	4.6	0.8	4.9	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Network Services Car Park 1	Illuminance	Lux	3.9	0.9	3.1	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Network Services Car Park 2	Illuminance	Lux	3.6	0.9	3.5	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Network Services Car Park 3	Illuminance	Lux	3.5	0.7	3.4	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Network Services Car Park 4	Illuminance	Lux	5.3	0.9	3.4	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)
Network Services Car Park 5	Illuminance	Lux	4.6	0.8	3.8	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)

### 4.5 Illuminance Design Results - Outdoor Operational Areas

An illuminance based design was carried out to determine the average horizontal illuminance  $(E_m)$ , illuminance uniformity  $(U_o)$  and illuminance diversity  $(U_d)$  using the lighting software program AGi32, version 2.31, supplied by Lighting Analysts, Inc.

The applicable design areas include the network services depot, log loading siding, tank siding, rail marshalling yard (including maintenance facilities and general areas), container terminal and freight forwarding private sidings.

Design area boundaries and calculation grid points were established in accordance with E-ST-EL-0131. Refer to the design results below:

Illuminance Calculation Summary Table - KiwiRail Traction and Electrical Standard E-ST-EL-0131						
Label	CalcType	Units	Avg	Uo (Min/Avg)	Ud (Min/Max)	Design Requirements
Container Terminal Handling Area	Illuminance	Lux	39.4	0.4	0.2	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2
Freight Forwarding Area 1	Illuminance	Lux	33.2	0.4	0.2	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2
Freight Forwarding Area 2	Illuminance	Lux	32.2	0.4	0.3	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2
Log Loading Area and Tank Siding	Illuminance	Lux	37.1	0.4	0.2	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2
Network Services Handling Areas	Illuminance	Lux	37.2	0.4	0.3	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2
Railway Marshalling Areas	Illuminance	Lux	31.6	0.4	0.2	Table 6.1 - Avg >= 20 Lux, Uo >= 0.4 and Ud >= 0.2

### 4.6 Spill Light

# 4.74.6 Obtrusive Lighting Calculation Results

### 4.7.14.6.1 Spill Light

According to AS/NZS 4282:2019, the Freight Hub is within zone A2 where the vertical illumination on the walls of residential buildings containing windows is not permitted to exceed 1 Lux. No specific design to check individual properties has been completed, however the 1 Lux horizontal isolux contour line (originating from the Freight Hub) has been plotted on the layout drawings to provide a visual guide.

During detailed design specific spill light and glare calculations can be completed for individual residential properties if deemed necessary.

Spill light calculations were caried out to determine the maximum point vertical illuminance (Lux) on the front faces of residential buildings in close proximity of the proposed Fright Hub. The existing trees and vegetation (between the properties and proposed Fright Hub) were not considered therefore the actual spill light should be less than the results indicate.

Refer to the design results below:

**North East Properties:** 

# SPILL LIGHT CALCULATION RESULTS - NORTH EAST PROPERTIES

# Maximum Vertical Illuminance of 1 Lux (Zone A2 Curfew Hours)

Location	Maximum Calculated Value	Complies (Y/N)
22A Clevely Line	0.4	Y
41A Clevely Line	0.3	Υ
41B Clevely Line	0.3	Y
1 Nathan Place	0.3	Y
2 Nathan Place	0.4	Υ
3 Nathan Place	0.4	Y
4 Nathan Place	0.4	Y
5 Nathan Place	0.4	Υ
6 Nathan Place	0.5	Υ
7 Nathan Place	0.6	Υ
27 Parrs Road	0.4	Υ
55D Parrs Road	0.2	Υ
58 Parrs Road	0.3	Y
59 Parrs Road	0.2	Υ
9 Sangsters Road	0.4	Υ
11 Sangsters Road	0.2	Υ
15 Sangsters Road	0.3	Υ
25 Sangsters Road	0.3	Y
43 Sangsters Road	0.7	Υ
819 Stoney Creek Road	0.4	Υ
821 Stoney Creek Road	0.7	Y

#### **South East and South West Properties:**

# SPILL LIGHT CALCULATION RESULTS - SOUTH EAST AND SOUTH WEST PROPERTIES

# Maximum Vertical Illuminance of 1 Lux (Zone A2 Curfew Hours)

Location	Maximum Calculated Value	Complies (Y/N)
163 Clevely Line	0.0	Υ
422 Railway Road	1.0	Υ
761 Roberts Line	0.3	Υ
771 Roberts Line	0.4	Υ
787 Roberts Line	0.0	Υ
803 Roberts Line	0.0	Υ
814 Roberts Line	0.0	Υ
824 Roberts Line	0.0	Υ
824A Roberts Line	0.0	Y
73 Sangsters Road	0.8	Υ
91 Sangsters Road	0.7	Υ
95 Sangsters Road	0.8	Υ

<u>new</u>

New

Page | 12

428 Tutaki Road	0.2	Υ
-----------------	-----	---

#### **North West Properties:**

# SPILL LIGHT CALCULATION RESULTS - NORTH WEST PROPERTIES

Maximum Vertical Illuminance of 1 Lux (Zone A2 Curfew Hours)

Location	Maximum Calculated Value	Complies (Y/N)
1 Maple Street	0.3	Y
1A Maple Street	0.3	Y
3 Maple Street	0.3	Υ
5 Maple Street	0.3	Υ
7 Maple Street	0.3	Y
7A Maple Street	0.3	Y
9 Maple Street	0.3	Υ
9A Maple Street	0.4	Y
11 Maple Street	0.3	Y
11A Maple Street	0.4	Υ
13 Maple Street	0.4	Υ
15 Maple Street	0.4	Υ
17 Maple Street	0.5	Υ
19 Maple Street	0.4	Y
21 Maple Street	0.4	Υ
57 Maple Street	0.2	Y
241 Te Ngaio Road	0.1	Y
242 Te Ngaio Road	0.1	Y
245 Te Ngaio Road	0.1	Υ

New

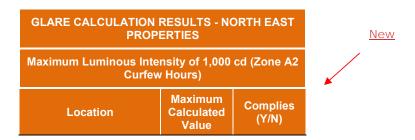
<u>The calculations indicate that spill light will not be an issue as the values are under the Zone A2 limits for curfew hours.</u>

#### 4.6.2 Glare

Glare calculations were caried out to determine the maximum luminous intensity (cd) per luminaire on the front faces of residential buildings in close proximity of the proposed Fright Hub. The existing trees and vegetation (between the properties and proposed Freight Hub) were included in the calculations using the standard object library within the AGi32 software. Note that using the AGi32 tree objects (from the standard library) is only an approximation of the likely effects that the existing trees and vegetation may have on the calculation results.

Refer to the design results below:

**North East Properties:** 



Page | 13

22A Clevely Line	25,243	N
41A Clevely Line	4,374	N
41B Clevely Line	2,295	N
1 Nathan Place	60,501	N
2 Nathan Place	61,821	N
3 Nathan Place	63,066	N
4 Nathan Place	64,085	N
5 Nathan Place	64,811	N
6 Nathan Place	67,598	N
7 Nathan Place	68,357	N
27 Parrs Road	2,089	N
55D Parrs Road	4,492	N
58 Parrs Road	1,868	N
59 Parrs Road	2,188	N
9 Sangsters Road	2,483	N
11 Sangsters Road	1,801	N
15 Sangsters Road	2,003	N
25 Sangsters Road	2,076	N
43 Sangsters Road	12,922	N
819 Stoney Creek Road	55,602	N
821 Stoney Creek Road	63,129	N

#### **South East and South West Properties:**

# SPILL LIGHT CALCULATION RESULTS - SOUTH EAST AND SOUTH WEST PROPERTIES

# Maximum Luminous Intensity of 1,000 cd (Zone A2 Curfew Hours)

Location	Maximum Calculated Value	Complies (Y/N)
163 Clevely Line	18,239	N
422 Railway Road	49,079	N
761 Roberts Line	3,346	N
771 Roberts Line	31,745	N
787 Roberts Line	2,627	N
803 Roberts Line	2,451	N
814 Roberts Line	226	Y
824 Roberts Line	323	Y
824A Roberts Line	453	Υ
73 Sangsters Road	56,094	N
91 Sangsters Road	52,377	N
95 Sangsters Road	52,200	N
428 Tutaki Road	7,594	N

<u>New</u>

North West Properties:

# SPILL LIGHT CALCULATION RESULTS - NORTH WEST PROPERTIES

# Maximum Luminous Intensity of 1,000 cd (Zone A2 Curfew Hours)

Location	Maximum Calculated Value	Complies (Y/N)
1 Maple Street	59,589	Ζ
1A Maple Street	60,476	Ν
3 Maple Street	61,053	N
5 Maple Street	61,532	N
7 Maple Street	62,340	N
7A Maple Street	62,516	N
9 Maple Street	63,348	N
9A Maple Street	61,836	N
11 Maple Street	63,919	N
11A Maple Street	62,136	N
13 Maple Street	62,747	N
15 Maple Street	61,052	N
17 Maple Street	60,723	N
19 Maple Street	56,636	N
21 Maple Street	54,988	N
57 Maple Street	22,251	N
241 Te Ngaio Road	3,824	N
242 Te Ngaio Road	1,932	N
245 Te Ngaio Road	3,970	N



The results indicate that the amount of glare will be high if the current design is adopted.

To mitigate the glare the following measures can be adopted during detailed design:

- Use proprietary glare shields (rear, sides and/or front as required).
- Adjust luminaire mounting parameters (orientation, aiming angles and/or tilts as required).
- Select lower output luminaires, however this may require additional poles.
- Select alternative luminaires from other supplier(s).

#### 4.6.3 Sky Glow (UWLR)

The UWLR was calculated for the propose Freight Hub site for all luminaires.

Refer to the design results below:

UWLR Area Summary	
Label	UWLR
LPDArea_1	0.003

<u>The calculations indicate that the calculated UWLR of 0.003 is well below the Zone A2 maximum limit of 0.01.</u>

# 5. Flood Lighting Poles

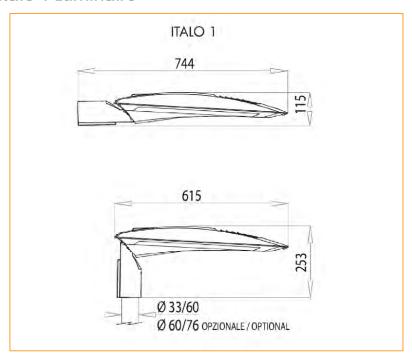
All new internal access road / car parking poles shall be Spunlite Subdivisional (or equal) hot dip galvanised tapered octagonal steel ground planted poles complete with curved outreach arms.

The new outdoor operational area poles shall be Spunlite (or equal) 22.4m flange based general purpose flood lighting poles complete with 0.6m long cross arms.

Refer to Appendix B for typical lighting pole details.

# Appendix A LED Floodlight Luminaire Details

### A.1 AEC Italo 1 Luminaire

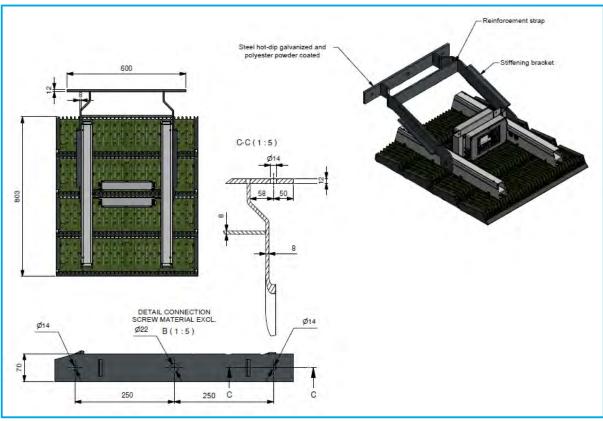






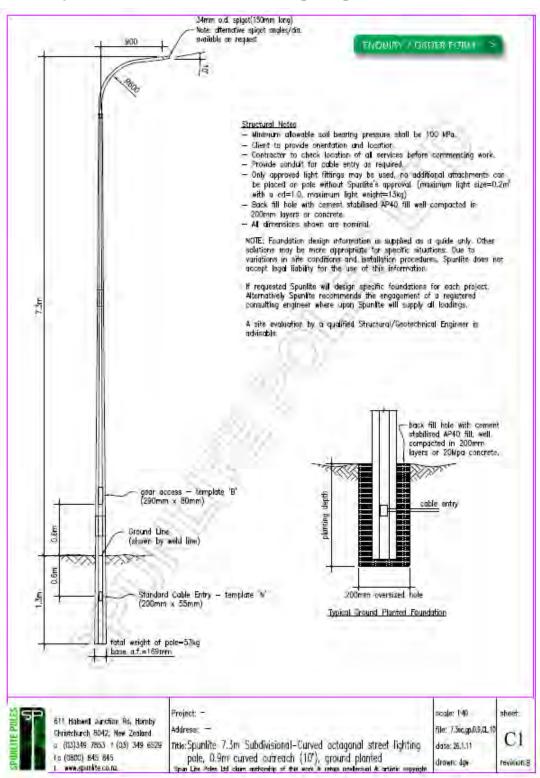
## A.2 EWO R4 LED Floodlight



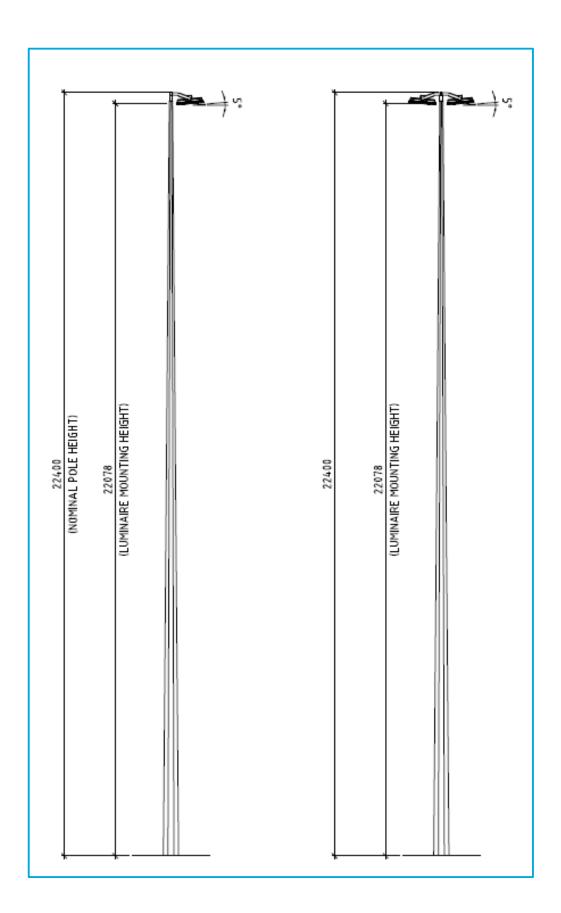


# **Appendix B** Lighting Pole Details

## B.1 Spunlite 7.3m Subdivisional Lighting Pole



B.2	Spunlite 22.4m Flange Based Flood Lighting Pole



# Appendix C Drawings

#### Dunedin

Level 3 John Wickliffe House, 265 Princes Street
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PO Box 13-052, Armagh
Christchurch 8141
Tel +64 3 477 0885
Fax +64 3 477 0616

Please visit www.stantec.com to learn more about how Stantec design with community in mind.



#### LUMINAIRE AND POLE LIST

TYPE	LED LUMINAIRE DESCRIPTION	POLE / MOUNTING DESCRIPTION	MOUNTING HEIGHT	OUTREACH ARM / BRACKET MOUNTING DETAILS	TILT ANGLE	LUMINAIRE QTY
Α	AEC ITALO 1 (STAN0 4000K 350mA 3M) 27W LED	SPUNLITE SUBDIVISIONAL GP LIGHTING POLE C/W SINGLE ARM	7.3m	0.9M SINGLE CURVED OUTREACH ARM	0	123
В	AEC ITALO 1 (STAN0 4000K 525mA 4M) 51W LED	SPUNLITE SUBDIVISIONAL GP LIGHTING POLE C/W SINGLE ARM	7.3m	0.9M SINGLE CURVED OUTREACH ARM	5	3
С	AEC ITALO 1 (S05 4000K 350mA 2M) 27W LED	SPUNLITE SUBDIVISIONAL GP LIGHTING POLE C/W SINGLE ARM	7.3m	0.9M SINGLE CURVED OUTREACH ARM	0	27
D	AEC ITALO 1 (S05 4000K 350mA 2M) 27W LED (2 PER POLE)	SPUNLITE SUBDIVISIONAL GP LIGHTING POLE C/W DOUBLE ARMS	7.3m	0.9M DOUBLE CURVED OUTREACH ARMS	0	4
Е	AEC ITALO 1 (S05 4000K 350mA 3M) 39W LED	SPUNLITE SUBDIVISIONAL GP LIGHTING POLE C/W SINGLE ARM	7.3m	0.9M SINGLE CURVED OUTREACH ARM	0	16
F	AEC ITALO 1 (S05 4000K 350mA 3M) 39W LED (2 PER POLE)	SPUNLITE SUBDIVISIONAL GP LIGHTING POLE C/W DOUBLE ARMS	7.3m	0.9M DOUBLE CURVED OUTREACH ARMS	0	4
G	EWO R4 (GEN 3 EP09 LR OPTIC 4000K 1800mA) 1523W	SPUNLITE 22.4m FLB FLOOD LIGHTING POLE C/W 0.6m CROSS ARM	22.078m	PROPRIETARY OVER-FRAME BRACKET MOUNTED TO POLE CROSS ARM (VERTICAL FACE)	5	24
Н	EWO R4 (GEN 3 EP09 LR OPTIC 4000K 1800mA) 1523W (2 PER POLE)	SPUNLITE 22.4m FLB FLOOD LIGHTING POLE C/W 0.6m CROSS ARM	22.078m	PROPRIETARY OVER-FRAME BRACKET MOUNTED TO POLE CROSS ARM (VERTICAL FACE)	5	82
J	EWO R4 (GEN 3 EP09 LR OPTIC 4000K 1800mA) 1523W	SPUNLITE 22.4m FLB FLOOD LIGHTING POLE C/W 0.6m CROSS ARM	22.078m	PROPRIETARY OVER-FRAME BRACKET MOUNTED TO POLE CROSS ARM (VERTICAL FACE)	10	25
K	EWO R4 (GEN 3 EP09 LR OPTIC 4000K 1800mA) 1523W (2 PER POLE)	SPUNLITE 22.4m FLB FLOOD LIGHTING POLE C/W 0.6m CROSS ARM	22.078m	PROPRIETARY OVER-FRAME BRACKET MOUNTED TO POLE CROSS ARM (VERTICAL FACE)	10	26
L	EWO R4 (GEN 3 EP09 LR OPTIC 4000K 1800mA) 1523W	BUILDING MOUNTED	12m	PROPRIETARY STIRRUP BRACKET MOUNTED TO BUILDING (VERTICAL FACE)	20	28

#### LEGEND

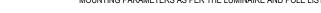
• <del>- 📜</del> A	NEW LED LUMINAIRE MOUNTED ON N
A	MOUNTING PARAMETERS AS PER TH

NEW GROUND PLANTED LIGHTING POLE (LETTER DENOTES PARTICULAR LUMINAIRE TYPE AND

NEW LED LUMINAIRES (2 OFF) MOUNTED ON NEW GROUND PLANTED LIGHTING POLE (LETTER DENOTES PARTICULAR LUMINAIRE TYPE AND MOUNTING PARAMETERS AS PER THE LUMINAIRE AND POLE LIST)



NEW LED FLOODLIGHT MOUNTED ON NEW FLANGE BASED LIGHTING POLE (LETTER DENOTES PARTICULAR LUMINAIRE TYPE AND MOUNTING PARAMETERS AS PER THE LUMINAIRE AND POLE LIST)





NEW LED FLOODLIGHTS (2 OFF) MOUNTED ON NEW FLANGE BASED LIGHTING POLE (LETTER DENOTES PARTICULAR LUMINAIRE TYPE AND MOUNTING PARAMETERS AS PER THE LUMINAIRE AND POLE LIST)



PROPOSED LIGHTING ISOLUX CONTOUR LINES



SPILL LIGHTING ISOLUX CONTOUR LINES (1 LUX AT MF = 1.0) (REFER SPILL LIGHT NOTES)

#### CALCULATION RESULTS - ACCESS ROADS AND CAR PARKS - ILLUMINANCE LEVELS AND UNIFORMITIES

Illuminance Calculation Summary Table - AS/	luminance Calculation Summary Table - AS/NZS 1158.3.1:2020								
Label	CalcType	Units	Avg	Min	Max/Avg	Description			
Access Roads	Illuminance	Lux	2.2	0.14	9.7	Cat PR5 - 0.85 Lux (Avg), 0.14 Lux (Min) and Uniformity (Max/Avg) of 10 (Max)			
Container Terminal Car Park 1	Illuminance	Lux	3.8	0.8	3.1	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Container Terminal Car Park 2	Illuminance	Lux	4.8	0.8	3.3	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Container Terminal Car Park 3	Illuminance	Lux	3.8	0.9	4.0	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Freight Forwarding Car Park	Illuminance	Lux	4.6	0.8	4.9	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Network Services Car Park 1	Illuminance	Lux	3.9	0.9	3.1	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Network Services Car Park 2	Illuminance	Lux	3.6	0.9	3.5	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Network Services Car Park 3	Illuminance	Lux	3.5	0.7	3.4	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Network Services Car Park 4	Illuminance	Lux	5.3	0.9	3.4	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			
Network Services Car Park 5	Illuminance	Lux	4.6	0.8	3.8	Cat PC3 - 3.5 Lux (Avg), 0.7 Lux (Min) and Uniformity (Max/Avg) of 8 (Max)			

#### CALCULATION RESULTS - OUTDOOR OPERATIONAL AREAS - ILLUMINANCE LEVELS AND UNIFORMITIES

Illuminance Calculation Summary Table - KiwiRail Traction and Electrical Standard E-ST-EL-0131										
Label	CalcType	Units	Avg	Uo (Min/Avg)	Ud (Min/Max)	Design Requirements				
Container Terminal Handling Area	Illuminance	Lux	39.4	0.4	0.2	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2				
Freight Forwarding Area 1	Illuminance	Lux	33.2	0.4	0.2	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2				
Freight Forwarding Area 2	Illuminance	Lux	32.2	0.4	0.3	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2				
Log Loading Area and Tank Siding	Illuminance	Lux	37.1	0.4	0.2	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2				
Network Services Handling Areas	Illuminance	Lux	37.2	0.4	0.3	Table 6.1 - Avg >= 30 Lux, Uo >= 0.4 and Ud >= 0.2				
Railway Marshalling Areas	Illuminance	Lux	31.6	0.4	0.2	Table 6.1 - Avg >= 20 Lux, Uo >= 0.4 and Ud >= 0.2				

#### NOTES

- 1. THE ACCESS ROAD LIGHTING HAS BEEN DESIGNED TO COMPLY WITH THE SUBCATEGORY PR5 REQUIREMENTS OF AS/NZS 1158.3.1:2020 (PEDESTRIAN AREA (CATEGORY P) LIGHTING -PERFORMANCE AND DESIGN REQUIREMENTS). AND THE CAR PARK LIGHTING HAS BEEN DESIGNED TO COMPLY WITH THE SUBCATEGORY PC3 REQUIREMENTS OF AS/NZS 1158.3.1:2020. REFER TO THE CALCULATION RESULTS SUMMARY TABLE. THE CALCULATIONS WERE COMPLETED WITHOUT ANY CONTRIBUTION FROM THE OUTDOOR WORK AREA LED FLOODLIGHTING.
- 2. THE OUTDOOR OPERATIONAL AREAS (FREIGHT MARSHALLING YARDS, RAIL MOVEMENTS AND FREIGHT HANDLING AREAS) ARE DESIGNED TO COMPLY WITH THE RELEVANT LIGHTING REQUIREMENTS FROM TABLE 6.1 OF THE KIWIRAIL TRACTION AND ELECTRICAL STANDARD E-ST-EL-0131.
- THE ACCESS ROAD AND CAR PARK LUMINAIRES SHALL BE AEC ITALO LEDS WITH MODULES AND WATTAGES AS SPECIFIED IN THE LUMINAIRE AND POLE LIST. THE QUALITY OF MANUFACTURE AND OPTICAL PERFORMANCE OF ANY ALTERNATIVE LUMINAIRES SHALL MATCH OR EXCEED THAT OF THE ITALO (INCLUDING THE CURRENT DESIGN ILLUMINANCE LEVELS) AND SUPPORTING CALCULATIONS SHALL BE REQUIRED TO BE SUBMITTED ALONG WITH ANY ALTERNATIVE LUMINAIRES OFFERED.
- 4. THE LED FLOODLIGHTS SHALL BE EWO R4 GENERATION 3 LED FLOODLIGHTS (OR EQUAL), SUPPLIED BY ENERGYLIGHT LTD, WITH OPTICS AND WATTAGES AS SPECIFIED IN THE LUMINAIRE AND POLE LIST. THE QUALITY OF MANUFACTURE AND OPTICAL PERFORMANCE OF ANY ALTERNATIVE LED FLOODLIGHTS SHALL MATCH OR EXCEED THAT OF THE EWO R4 (INCLUDING THE CURRENT DESIGN ILLUMINANCE LEVELS) AND SUPPORTING CALCULATIONS SHALL BE REQUIRED TO BE SUBMITTED ALONG WITH ANY ALTERNATIVE LUMINAIRES OFFERED.
- WHEN INSTALLED ALL NEW LUMINAIRES SHALL HAVE THE MOUNTING HEIGHTS AND TILT ANGLES AS SPECIFIED IN THE LUMINAIRE AND POLE LIST. THE NEW FLOODLIGHTING LUMINAIRES SHALL BE ATTACHED TO THE FRONT FACE OF THE LIGHTING POLE CROSS ARMS (1.2m LONG - SUPPLIED WITH THE LIGHTING POLES) IN ACCORDANCE WITH THE LED MANUFACTURES INSTRUCTIONS USING PROPRIETARY EWO R4 STANDARD STIRRUP BRACKETS (SUPPLIED WITH THE NEW LUMINAIRES). ALL LUMINAIRES SHALL BE AIMED IN ACCORDANCE WITH THE ORIENTATIONS DEPICTED ON THE LAYOUT DRAWINGS.
- A LIGHTING CONTROL SYSTEM SHALL BE SPECIFIED DURING DETAILED DESIGN, HOWEVER THE ACCESS ROAD AND CAR PARK LIGHTING SHALL BE CONTROLLED INDEPENDENTLY FROM THE OUTDOOR WORK AREA FLOODLIGHTS. THE OUTDOOR FLOODLIGHTS SHALL BE MANUALLY CONTROLLED FROM WITHIN EACH SPECIFIC WORK AREA. LOW LEVEL SECURITY LIGHTING SHALL BE PROVIDED FROM SELECTED ACCESS ROAD LIGHTS THAT WILL OPERATE DURING THE HOURS OF DARKNESS WHEN OPERATIONS HAVE STOPPED.
- THE COMPLETE LIGHTING UPGRADE REQUIRES NEW LED LUMINAIRES TO BE MOUNTED ONTO NEW LIGHTING POLES.
- ALL MATERIALS (INCLUDING LUMINAIRES, POLES, CROSS ARMS, BRACKETS AND MOUNTING HARDWARE) SHALL COMPLY WITH THE DURABILITY REQUIREMENTS OF KIWIRAIL
- THIS DRAWING ONLY DEPICTS THE LUMINAIRES AND MOUNTING REQUIREMENTS ASSOCIATED WITH THE LIGHTING DESIGN. ANY WORK ASSOCIATED WITH PROVIDING POWER SUPPLY INFRASTRUCTURE (TO SUPPLY THE NEW LUMINAIRES) IS OUTSIDE THE SCOPE OF THIS DESIGN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY POWER SUPPLY DESIGN AND INSTALLATION (REQUIRED TO PROVIDE POWER AND CONTROLS TO THE NEW LIGHTING) AND SHALL PAY ANY ASSOCIATED LOCAL ELECTRICITY NETWORK FEES. THE CONTRACTOR SHALL COMPLY WITH THE ELECTRICITY (SAFETY) REGULATIONS, AS/NZS 3000 (NZ WIRING RULES) AND ANY SPECIFIC KIWIRAIL RULES AND PROCEDURES AS APPLICABLE.
- 11. EACH NEW STEEL LIGHTING POLE SHALL BE EARTHED / BONDED TO THE FREIGHT HUB ELECTRICAL EARTHING SYSTEM IN ACCORDANCE WITH KIWIRAIL REQUIREMENTS.

#### SPILL LIGHT NOTES

- ACCORDING TO AS/NZS 4282:2019 (CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING) THE FREIGHT HUB IS WITHIN ZONE A2 (SPARSELY INHABITED RURAL / SEMI-RURAL AREAS WITH LOW DISTRICT BRIGHTNESS) WHERE THE VERTICAL ILLUMINATION (ON THE FRONT FACES OF RESIDENTIAL BUILDINGS CONTAINING WINDOWS) IS NOT PERMITTED TO EXCEED 1 LUX. TO ASSIST IN DETERMINING THE LIKELY AMOUNT OF SPILL LIGHT, ORIGINATING FROM THE FREIGHT HUB, THE 1 LUX HORIZONTAL ISOLUX CONTOUR LINES HAVE BEEN PLOTTED ON THE LAYOUT DRAWINGS.
- 2. REFER TO FIG 210 FOR THE SPILL LIGHT CALCULATIONS AND FIG 211 FOR THE GLARE CALCULATIONS AT SPECIFIED RESIDENTIAL BUILDINGS.

#### REFERENCE DRAWINGS

FIG: 201	LIGHTING LAYOUT SHEET 1 OF 8
FIG: 202	LIGHTING LAYOUT SHEET 2 OF 8
FIG: 203	LIGHTING LAYOUT SHEET 3 OF 8
FIG: 204	LIGHTING LAYOUT SHEET 4 OF 8
FIG: 205	LIGHTING LAYOUT SHEET 5 OF 8
FIG: 206	LIGHTING LAYOUT SHEET 6 OF 8
FIG: 207	LIGHTING LAYOUT SHEET 7 OF 8
FIG: 208	LIGHTING LAYOUT SHEET 8 OF 8
FIG: 209	LIGHTING POLE AND LUMINAIRE MOUNTING DETAIL
FIG: 210	SPILL LIGHT CALCULATIONS

GLARE CALCULATIONS

KiwiRail Stantec

KIWIRAIL HUB SITE 3-G2 LIGHTING INFORMATION SHEET

Drawn By: IAN CAMPBEL

**FIG: 200** 

SHEET 1 OF 8

SHEET 2 OF 8

SHEET 3 OF 8





KIWIRAIL HUB SITE 3-G2 LIGHTING LAYOUT SHEET 5 OF 8

Drawn By: IAN CAMPBELL Scale: 1:1000

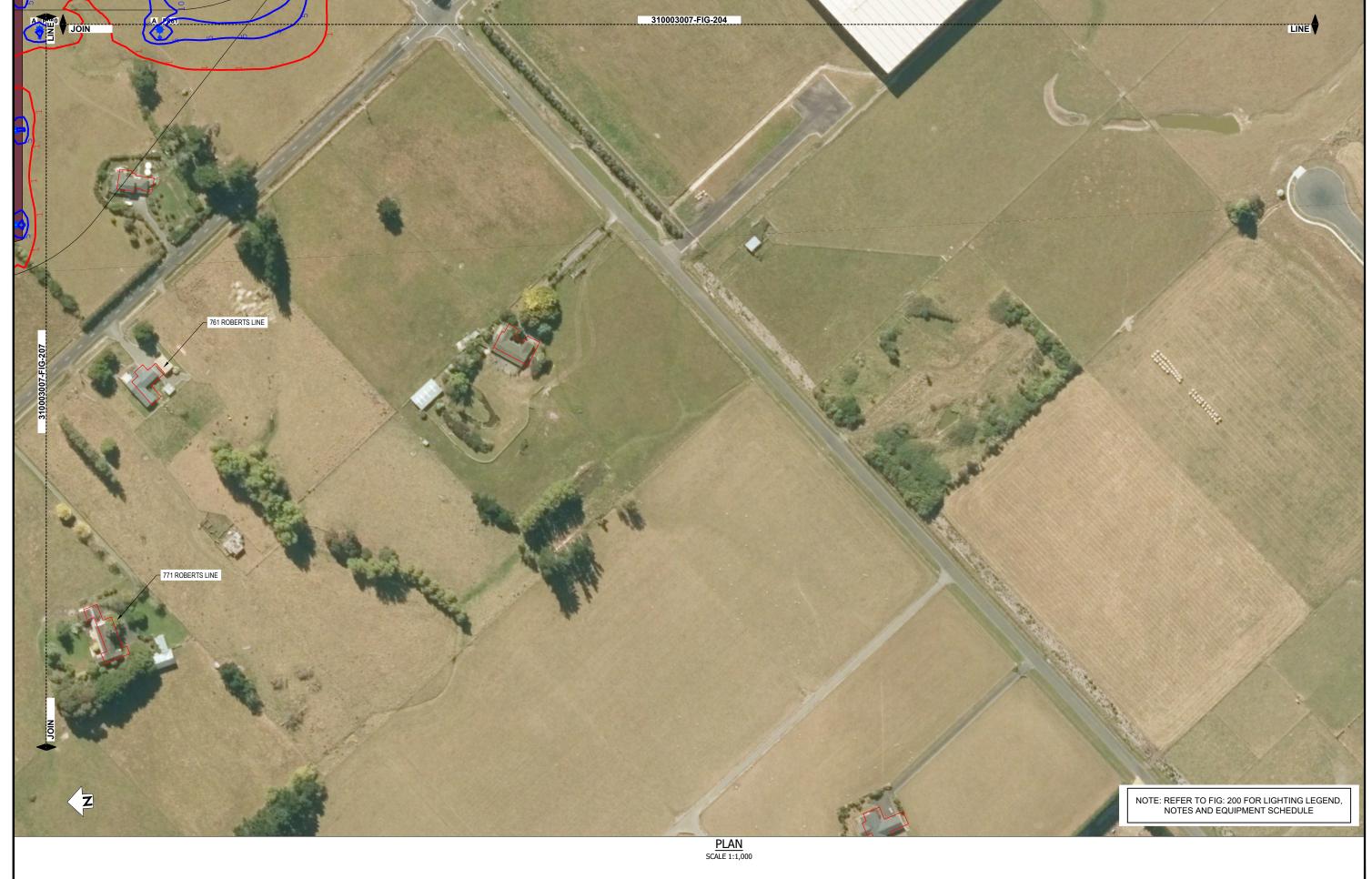
FIG: 205

FIG: 206

SHEET 6 OF 8

C:\pwworkdir\ap\_projects01\d0117046\310003007-FIG-206-SITE 3-G2 Lighting Layout.dwg

C:\pwworkdir\ap\_projects01\d0117046\310003007-FIG-207-SITE 3-G2 Lighting Layout.dw







KIWIRAIL HUB SITE 3-G2 LIGHTING LAYOUT SHEET 8 OF 8

Drawn By: IAN CAMPBELL Scale: 1:1000

FIG: 208

KIWIRAIL HUB SITE 3-G2 LIGHTING POLE AND LUMINAIRE MOUNTING DETAILS

**NOTES** 

POLE AND LUMINAIRE DETAILS ARE

 FINAL POLE CONFIGURATIONS,
 LUMINAIRE DETAILS AND MOUNTING ARRANGEMENTS SHALL BE FINALISED DURING DETAILED DESIGN.

NOTE: REFER TO FIG: 200 FOR LIGHTING LEGEND,

NOTES AND EQUIPMENT SCHEDULE

INDICATIVE ONLY.

Drawn By: IAN CAMPBELL NTS

-NEW ITALO LUMINAIRE

FIG: 209

Job No: 310003007

_abel	CalcType	Units	Max	Description		
Clevely Line - No 22A_III_Seg1 Clevely Line - No 22A_III_Seg2	Obtrusive - III	Lux	0.1			one A2 curfew hours)
Clevely Line - No 22A_III_Seg2	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours) One A2 curfew hours)
Clevely Line - No 22A_III_Seg4	Obtrusive - III	Lux	0.3			one A2 curfew hours)
Elevely Line - No 22A_III_Seg5 Elevely Line - No 22A_III_Seg6	Obtrusive - III	Lux	0.0			one A2 curfew hours) one A2 curfew hours)
levely Line - No 41A_III_Seg1	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours)
levely Line - No 41A_III_Seg2 levely Line - No 41A_III_Seg3	Obtrusive - III	Lux	0.3			one A2 curfew hours) one A2 curfew hours)
Clevely Line - No 41A_III_Seg4	Obtrusive - III	Lux	0.3			one A2 curfew hours)
Clevely Line - No 41A_III_Seg5 Clevely Line - No 41A_III_Seg6	Obtrusive - III	Lux	0.0	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours) one A2 curfew hours)
Clevely Line - No 41B_III_Seg1	Obtrusive - III	Lux	0.1			one A2 curfew hours)
Clevely Line - No 41B_III_Seg2 Clevely Line - No 41B_III_Seg3	Obtrusive - III	Lux	0.3			one A2 curfew hours) one A2 curfew hours)
Clevely Line - No 41B_III_Seg4	Obtrusive - III Obtrusive - III	Lux	0.3			one A2 curfew hours) one A2 curfew hours)
Clevely Line - No 41B_III_Seg5 lathan PI - No 1_III_Seg1	Obtrusive - III	Lux	0.0			one A2 currew hours)
lathan PI - No 1_III_Seg2	Obtrusive - III	Lux	0.0			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 1_III_Seg3 lathan PI - No 2_III_Seg1	Obtrusive - III	Lux	0.3			one A2 currew hours)
lathan PI - No 2_III_Seg2	Obtrusive - III	Lux	0.0			one A2 curfew hours)
lathan PI - No 2_III_Seg3 lathan PI - No 3_III_Seg1	Obtrusive - III	Lux	0.4			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 3_III_Seg2	Obtrusive - III	Lux	0.0			one A2 curfew hours)
lathan PI - No 3_III_Seg3 lathan PI - No 3_III_Seg4	Obtrusive - III	Lux	0.4	Maximum Vertical IIII	uminance of 1 Lux (2 uminance of 1 Lux (2	one A2 curfew hours) one A2 curfew hours)
lathan PI - No 3_III_Seg5	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 3_III_Seg6 lathan PI - No 3_III_Seg7	Obtrusive - III Obtrusive - III	Lux	0.0			one A2 curfew hours) Cone A2 curfew hours)
lathan PI - No 4_III_Seg1	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 4_III_Seg2 lathan PI - No 4_III_Seg3	Obtrusive - III Obtrusive - III	Lux	0.0			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 4_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical IIII	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 5_III_Seg1 lathan PI - No 5_III_Seg2	Obtrusive - III	Lux	0.4			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 5_III_Seg3	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 5_III_Seg4 lathan PI - No 6_III_Seg1	Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 6_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 6_III_Seg3 lathan PI - No 6_III_Seg4	Obtrusive - III Obtrusive - III	Lux	0.5			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 6_III_Seg5	Obtrusive - III	Lux	0.5	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 6_III_Seg6 lathan PI - No 6_III_Seg7	Obtrusive - III Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 6_III_Seg8	Obtrusive - III	Lux	0.1	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 7_III_Seg1 lathan PI - No 7_III_Seg2	Obtrusive - III Obtrusive - III	Lux	0.5			one A2 curfew hours) one A2 curfew hours)
lathan PI - No 7_III_Seg3	Obtrusive - III	Lux	0.6	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
lathan PI - No 7_III_Seg4 Parrs Rd - No 27_III_Seg1	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 27_III_Seg2	Obtrusive - III	Lux	0.4			one A2 curfew hours)
Parrs Rd - No 27_III_Seg3	Obtrusive - III Obtrusive - III	Lux	0.3	Maximum Vertical IIII	uminance of 1 Lux (2	one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 27_III_Seg4 arrs Rd - No 27_III_Seg5	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
arrs Rd - No 27_III_Seg6 arrs Rd - No 27_III_Seg7	Obtrusive - III Obtrusive - III	Lux	0.4			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 55D_III_Seg1	Obtrusive - III	Lux	0.0			one A2 curfew hours)
arrs Rd - No 55D_III_Seg2 arrs Rd - No 55D_III_Seg3	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 55D_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
arrs Rd - No 55D_III_Seg5 arrs Rd - No 55D_III_Seg6	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours)
arrs Rd - No 55D_III_Seg6 arrs Rd - No 55D_III_Seg7	Obtrusive - III	Lux	0.0			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 58_III_Seg1	Obtrusive - III	Lux	0.1			one A2 curfew hours)
arrs Rd - No 58_III_Seg2 arrs Rd - No 58_III_Seg3	Obtrusive - III	Lux	0.3			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 58_III_Seg4	Obtrusive - III	Lux	0.0			one A2 curfew hours)
arrs Rd - No 58_III_Seg5 arrs Rd - No 59 III Seg1	Obtrusive - III Obtrusive - III	Lux	0.1			one A2 curfew hours) One A2 curfew hours)
arrs Rd - No 59_III_Seg10	Obtrusive - III	Lux	0.1	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
arrs Rd - No 59_III_Seg2 arrs Rd - No 59_III_Seg3	Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 59_III_Seg4	Obtrusive - III	Lux	0.1			one A2 curfew hours)
arrs Rd - No 59_III_Seg5 arrs Rd - No 59_III_Seg6	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours) one A2 curfew hours)
arrs Rd - No 59_III_Seg7	Obtrusive - III	Lux	0.2	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
arrs Rd - No 59_III_Seg8 arrs Rd - No 59_III_Seg9	Obtrusive - III Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 09_III_Seg1	Obtrusive - III	Lux	0.2	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 09_III_Seg2 angsters Rd - No 09_III_Seg3	Obtrusive - III	Lux	0.4			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 09_III_Seg4	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 09_III_Seg5 angsters Rd - No 09_III_Seg6	Obtrusive - III Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 09_III_Seg7	Obtrusive - III	Lux	0.1	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 11_III_Seg1 angsters Rd - No 11_III_Seg10	Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 11_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 11_III_Seg3 angsters Rd - No 11_III_Seg4	Obtrusive - III Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 11_III_Seg5	Obtrusive - III	Lux	0.1	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 11_III_Seg6 angsters Rd - No 11_III_Seg7	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 11_III_Seg8	Obtrusive - III	Lux	0.2	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 11_III_Seg9 angsters Rd - No 15_III_Seg1	Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 15_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 15_III_Seg3 angsters Rd - No 25_III_Seg1	Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 25_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 25_III_Seg3 angsters Rd - No 43_III_Seg1	Obtrusive - III Obtrusive - III	Lux	0.1			one A2 curfew hours) one A2 curfew hours)
angsters Rd - No 43_III_Seg2	Obtrusive - III	Lux	0.7	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 43_III_Seg3 angsters Rd - No 43_III_Seg4	Obtrusive - III Obtrusive - III	Lux	0.2			one A2 curfew hours) one A2 curfew hours)
Sangsters Rd - No 43_III_Seg5	Obtrusive - III	Lux	0.1	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
angsters Rd - No 43_III_Seg6 angsters Rd - No 43_III_Seg7	Obtrusive - III Obtrusive - III	Lux	0.5			one A2 curfew hours) one A2 curfew hours)
toney Creek Rd - No 819_III_Seg1	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
toney Creek Rd - No 819_III_Seg2 toney Creek Rd - No 819_III_Seg3	Obtrusive - III Obtrusive - III	Lux	0.4			one A2 curfew hours) one A2 curfew hours)
toney Creek Rd - No 819_III_Seg3	Obtrusive - III	Lux	0.0			one A2 currew nours) Cone A2 currew hours)
Stoney Creek Rd - No 819_III_Seg5	Obtrusive - III Obtrusive - III	Lux	0.4			one A2 curfew hours)
toney Creek Rd - No 819_III_Seg6 toney Creek Rd - No 819_III_Seg7	Obtrusive - III	Lux	0.4			one A2 curfew hours) one A2 curfew hours)
Stoney Creek Rd - No 819_III_Seg8	Obtrusive - III	Lux	0.4	Maximum Vertical III	uminance of 1 Lux (2	one A2 curfew hours)
Stoney Creek Rd - No 821_III_Seg1	Obtrusive - III	Lux	0.5			one A2 curfew hours)

#### SPILL LIGHT CALCULATION RESULTS - SE AND SW PROPERTIES

SPILL LIGHT CALCULATION	N RESULI	5 -	SE A	ND SW PROP	<u>ERTIES</u>
AS/NZS4282:2019 Control of Obtrusive Lighting Effects -					
Label	CalcType	Units	Max	Description	
Clevely Line - No 163_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Clevely Line - No 163 III Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Clevely Line - No 163_III_Seg3	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Clevely Line - No 163_III_Seg4	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 currew hours)
Clevely Line - No 163_III_Seg5	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Clevely Line - No 163_III_Seg6	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Clevely Line - No 163_III_Seg7	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg1	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg2	Obtrusive - III	Lux	1.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg3	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg4	Obtrusive - III	Lux	0.8	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg5	Obtrusive - III	Lux	0.2		ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg6	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Railway Rd - No 422_III_Seg7	Obtrusive - III	Lux	0.2		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 761_III_Seg1	Obtrusive - III	Lux	0.2		ce of 1 Lux (Zone A2 currew hours)
Roberts Line - No 761_III_Seg2	Obtrusive - III	Lux	0.3		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 761_III_Seg3	Obtrusive - III	Lux	0.3		ce of 1 Lux (Zone A2 curiew hours)
Roberts Line - No 761_III_Seg4	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curiew hours)
Roberts Line - No 761_III_Seg5	Obtrusive - III	Lux	0.1		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 761_III_Seg6	Obtrusive - III	Lux	0.3		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 761_III_Seg7	Obtrusive - III	Lux	0.1		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg1	Obtrusive - III	Lux	0.1		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg10	Obtrusive - III	Lux	0.3		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg11	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg2	Obtrusive - III	Lux	0.4		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg3	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg4	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg5	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg6	Obtrusive - III	Lux	0.4		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg7	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg8	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 771_III_Seg9	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 currew hours)
Roberts Line - No 777_III_Seg9	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curiew hours)
			0.0		
Roberts Line - No 787_III_Seg2	Obtrusive - III	Lux			ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 787_III_Seg3	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 787_III_Seg4	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 787_III_Seg5	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 787_III_Seg6	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 787_III_Seg7	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 787_III_Seg8	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 803_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 803_III_Seg2	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 803_III_Seg3	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 803 III Seg4	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 803_III_Seg5	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 803_III_Seg6	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curiew hours)
			0.0		
Roberts Line - No 814_III_Seg1	Obtrusive - III	Lux		Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 814_III_Seg2	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 814_III_Seg3	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 814_III_Seg4	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824_III_Seg2	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824_III_Seg3	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A III Seg10	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A_III_Seg11	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A III Seg3	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A_III_Seg5	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 currew hours)
Roberts Line - No 824A_III_Seg6	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 currew hours)
Roberts Line - No 824A_III_Seg7	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curiew hours)
Roberts Line - No 824A_III_Seg8	Obtrusive - III	Lux	0.0		
Roberts Line - No 824A_III_Segs				Maximum vertical illuminan	ce of 1 Lux (Zone A2 curfew hours)
Roberts Line - No 824A_III_Seg9	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 73_III_Seg1	Obtrusive - III	Lux			ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 73_III_Seg2	Obtrusive - III	Lux	0.7		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 73_III_Seg3	Obtrusive - III	Lux	0.5	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 73_III_Seg4	Obtrusive - III	Lux	0.8	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 73_III_Seg5	Obtrusive - III	Lux	0.2		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg1	Obtrusive - III	Lux	0.6		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg2	Obtrusive - III	Lux	0.5	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg3	Obtrusive - III	Lux	0.7	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg4	Obtrusive - III	Lux	0.6	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg5	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg6	Obtrusive - III	Lux	0.5		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 91_III_Seg7	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curiew hours)
	Obtrusive - III	Lux	0.0		
Sangsters Rd - No 91_III_Seg8					ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 95_III_Seg1	Obtrusive - III	Lux	0.4	maximum vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 95_III_Seg2	Obtrusive - III	Lux	0.7	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 95_III_Seg3	Obtrusive - III	Lux	0.4		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 95_III_Seg4	Obtrusive - III	Lux	0.8		ce of 1 Lux (Zone A2 curfew hours)
Sangsters Rd - No 95_III_Seg5	Obtrusive - III	Lux	0.2		ce of 1 Lux (Zone A2 curfew hours)
Tutaki Rd - No 428_III_Seg1	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Tutaki Rd - No 428_III_Seg2	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminan	ce of 1 Lux (Zone A2 curfew hours)
Tutaki Rd - No 428_III_Seg3	Obtrusive - III	Lux	0.0		ce of 1 Lux (Zone A2 curfew hours)
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#### SPILL LIGHT CALCULATION RESULTS - NW PROPERTIES

ACRIZC4000-0040 CtI -f Obtai I I-bti E#t-	O-1I-ti O		-64	
AS/NZS4282:2019 Control of Obtrusive Lighting Effects - Label		Units	Max	Description
Maple St - No 01_III_Seg1	CalcType Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01 III Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)  Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)
	Obtrusive - III	Lux	0.0	
Maple St - No 01_III_Seg3  Maple St - No 01_III_Seg4			0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)  Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01_III_Seg4	Obtrusive - III Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)  Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)
Maple St - No 01_III_Seg6	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg1	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg3	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg4	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg5	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg6	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg7	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 01A_III_Seg8	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 03_III_Seg1	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 03_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 03_III_Seg3	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 03_III_Seg4	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 03_III_Seg5	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 07_III_Seg1	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 07_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 07A_III_Seg1	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 07A_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09_III_Seg1	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09_III_Seg2	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09A (2 Storey) III Seg1	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09A (2 Storey) III Seg3	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_III_Seg5	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_III_Seg6	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 11_III_Seg1	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 11_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 11A_III_Seg1	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 11A_III_Seg2	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 13_III_Seg1	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 13_III_Seg2	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 15_III_Seg1	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 15_III_Seg2	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 17_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 17_III_Seg2	Obtrusive - III	Lux	0.5	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 19_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 19_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 currew hours)
Maple St - No 19_III_Seg3	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 currew hours)
Maple St - No 21_III_Seg1	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 21_III_Seg2	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)
Maple St - No 21_III_Seg3	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)
Maple St - No 21_III_Seg4	Obtrusive - III	Lux	0.4	Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)
Maple St - No 5 (2 Storey)_III_Seg1	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curiew hours)
	Obtrusive - III	Lux	0.3	
Maple St - No 5 (2 Storey)_III_Seg2 Maple St - No 5 (2 Storey)_III_Seg3	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)  Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
			0.3	
Maple St - No 5 (2 Storey)_III_Seg4	Obtrusive - III	Lux		Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_III_Seg5	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_III_Seg6	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_III_Seg7	Obtrusive - III	Lux	0.3	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 57_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 57_III_Seg2	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 57_III_Seg3	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 57_III_Seg4	Obtrusive - III	Lux	0.2	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Maple St - No 57_III_Seg5	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg10	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg11	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg12	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg13	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg14	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg2	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg3	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg5	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg6	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg7	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg8	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_III_Seg9	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 242 III Seg1	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 242_III_Seg2	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 242_III_Seg3	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 242_III_Seg4	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 242_III_Seg5	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
	Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 245_III_Seg1				
Te Ngaio Rd - No 245_III_Seg1 Te Ngaio Rd - No 245_III_Seg2	Obtrusive - III	Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
		Lux	0.1	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)  Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)
Te Ngaio Rd - No 245_III_Seg2	Obtrusive - III			
Te Ngaio Rd - No 245_III_Seg2 Te Ngaio Rd - No 245_III_Seg3	Obtrusive - III Obtrusive - III	Lux	0.0	Maximum Vertical Illuminance of 1 Lux (Zone A2 curfew hours)

#### SPILL LIGHT NOTES

- 1. ACCORDING TO AS/NZS 4282:2019 (CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING) THE FREIGHT HUB IS WITHIN ZONE A2 (SPARSELY INHABITED RURAL / SEMI-RURAL AREAS WITH LOW DISTRICT BRIGHTNESS) WHERE THE VERTICAL ILLUMINATION (ON THE FRONT FACES OF RESIDENTIAL BUILDINGS CONTAINING WINDOWS) IS NOT PERMITTED TO EXCEED 1 LUX DURING CURFEW HOURS (BETWEEN 11pm AND 6am). DURING NON-CURFEW HOURS THIS LIMIT INCREASES TO 5 LUX.
- ONLY THE CLOSEST RESIDENTIAL BUILDINGS SURROUNDING THE PROPOSED RAIL FREIGHT HUB SITE WERE CONSIDERED AND THE CALCULATION RESULTS INDICATE THAT THE 1 LUX POINT VERTICAL LIMIT WILL NOT BE EXCEEDED. THE EXISTING TREES AND VEGETATION (BETWEEN THE PROPERTIES AND RAIL FREIGHT HUB) WERE NOT TAKEN INTO ACCOUNT THEREFORE THE ACTUAL SPILL LIGHT ENTERING THE RESIDENTIAL PROPERTIES SHOULD BE SIGNIFICANTLY LOWER THAN THE CURRENT RESULTS INDICATE.

NOTE: REFER TO FIG: 200 FOR LIGHTING LEGEND, NOTES AND EQUIPMENT SCHEDULE



Job No: 310003007

KIWIRAIL HUB SITE 3-G2 LIGHTING SPILL LIGHT CALCULATIONS

Drawn By: IAN CAMPBELL AS SHOWN

FIG: 210

#### GLARE CALCULATION RESULTS - NE PROPERTIES

County   Lev   No. 12, 12, 12, 13, 12, 13, 12, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13	Clevely Line - No 22A_Cd_Seg1	CalcType Obtrusive - Cd	Units N.A.	Max 6019	Descri	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Columb   Law   19.20, Col. Regi						
Caregi Lee, No. 12, 52, 52, 52, 52, 52, 52, 52, 52, 52, 5	Clevely Line - No 22A_Cd_Seg4	Obtrusive - Cd	N.A.	19328	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Carely Line 1 to 14, 50, 5ept						
Computer   1965   Computer	Clevely Line - No 41A_Cd_Seg1	Obtrusive - Cd	N.A.		Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Computer   1967   C.   Supplement   C.   Suppl	Clevely Line - No 41A_Cd_Seg3			4249		
Campy   120	Clevely Line - No 41A_Cd_Seg4				Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Comparison   Com	Clevely Line - No 41A_Cd_Seg6	Obtrusive - Cd	N.A.	3875	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Tempt   Temp						
Computer   Column	Clevely Line - No 41B_Cd_Seg3	Obtrusive - Cd	N.A.	1702	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Select   Fig. 1	Clevely Line - No 41B_Cd_Seg5	Obtrusive - Cd	N.A.	1556	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Nation   Fig. 12, Sept						
Water   File   2, C. Spig   Contrave   Col   N.A.   \$1921   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$1921   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous intensing of 1,000 or 2 (2m A 2 cortex boson)   Water   File   2, C. Spig   Contrave   Col   N.A.   \$2505   Statement Luminous   Col   \$250	lathan PI - No 1_Cd_Seg3	Obtrusive - Cd			Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sealor P. No. 3, Cd., Seg1						
Sandern P. St. 2, C. Sign?  Obtainat - C. Sign.  Ob			_			
sales pil F. No. 3, Cd, Segl.  Comparis — G. VA. A. SSS55  Marrian Liminos Intending of 1,000 of 2,000 A Confere board shall be sales in the control of 1,000 of 2,000 A Confere board shall be sales in the control of 1,000 of 2,000 A Confere board shall be sales in the control of 1,000 of 2,000 A Confere board shall be sales in the control of 1,000 of 2,000 A Confere board shall be sales in the control of 1,000 A Confere board shall be sales in the	lathan PI - No 3_Cd_Seg2	Obtrusive - Cd	N.A.	60006	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
without Pr. No. 2, CE, Sign)  Observative CS,						
Salman F. Ne. C.C. Segri Obenius - C.G.  N.A. S0000 Maximum Luminous intensity of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 1,000 of 20m AC confere houses, and segring the control of 2,000 of 20m AC confere houses, and segring the control of 2,000 of 20m AC confere houses, and segring the control of 2,000 of 20m AC confere houses, and segring the control of 2,000 of 2					Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Statistim P. No. 6, Cot. Spag2   Cottonion - Cot.	lathan PI - No 3_Cd_Seg7	Obtrusive - Cd	N.A.	63066	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
saltes P - Ne 4, C.G. Segl4 Chestain - O. Sepl4 Chestain - O. Sepl						
Water   1- No. 5_CC, Sept   Obsession - Cd   N.A.   6427   Maximum Luminous intensity of 1,000 of 20me A2 confere house)   Water   1- No. 5_CC, Sept   Obsession - Cd   N.A.   6577   Maximum Luminous intensity of 1,000 of 20me A2 confere house)   Water   N.A.   6575   Maximum Luminous intensity of 1,000 of 20me A2 confere house)   Water   N.A.   6575   Water   N.A.   657	lathan PI - No 4_Cd_Seg3	Obtrusive - Cd	N.A.		Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Name   Print						
Selection   Price   Col. Segs	Nathan PI - No 5_Cd_Seg2	Obtrusive - Cd	_	_	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
National Pr. No. 6, Cel. Seg2	lathan PI - No 5_Cd_Seg4	Obtrusive - Cd	N.A.	64811	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Watern Fr. No. C. C. Seg3						
States   Ph. No. 6, Cd. Sept	lathan PI - No 6_Cd_Seg3	Obtrusive - Cd	N.A.	66985	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Settlement   1-No Co   Co   Segif   Cottourier   Col   N.A.   67397   Maximum Luminous Intensity of 1000 col   Zone Ac Curlem No. 11   Settlement   N.A.   67190   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   67190   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   67190   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   67190   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   68157   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   6815   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Zurem No. 11   Settlement   N.A.   2615   Maximum Luminous Intensity of 1000 col   Zone Ac Z	lathan PI - No 6_Cd_Seg5	Obtrusive - Cd	N.A.	67536	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Statistim Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   87486   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statist n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   874   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statist n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   877   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   877   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   1849   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   1849   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   1849   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 7 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statistics n Pr. No. 2 (cd. Sep8   Obtusive - Cd   N.A.   2059   Maximum Luminous Intensity of 1,000 ocd (Zone Ac Curlen Pours) statist						
Statistim P. No. 7 Cell. Sep3	lathan PI - No 6_Cd_Seg8	Obtrusive - Cd	N.A.	67486	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   67730 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1849 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1849 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1849 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1849 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1840 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1840 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 7, CG, Seg4 Chitturies - Cd NA.   1840 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 805, CG, Seg4 Chitturies - Cd NA.   1840 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan P. No 805, CG, Seg4 Chitturies - Cd NA.   2228 Maximum Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2328 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2428 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2438 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2439 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2440 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2440 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2440 Nathan Luminous Intensings of 1,000 of Come AC curfer hours) Nathan R. No 805, CG, Seg4 Chitturies - Cd NA.   2440 Nathan Luminous Intensings of 1,000 of Come						
Parts R4 - No 27 CG, Seg1	lathan PI - No 7_Cd_Seg3	Obtrusive - Cd	N.A.	67730	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Pare Ref. No. 77, Col. Seg3						
Parer R. 1-No 27, Col. Seg4  Cetrusive - Col N.A. 2156  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 27, Col. Seg6  Cetrusive - Col N.A. 1340  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 27, Col. Seg6  Cetrusive - Col N.A. 1340  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 27, Col. Seg6  Cetrusive - Col N.A. 1340  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 27, Col. Seg7  Cetrusive - Col N.A. 2228  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 2380  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 2483  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 2483  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 2483  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1483  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1483  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1484  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1483  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1253  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1889  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1889  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1894  Maximum Luminous Intensity of 1,000 of Come AC curfer horary area Rel No 26, Col. Seg6  Cetrusive - Col N.A. 1895  Maximum Luminous Intensity of 1,000						
Parrs R4 - No 27_CG_Seg6	Parrs Rd - No 27_Cd_Seg4	Obtrusive - Cd	N.A.	2156	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Parrs Rd - No SSC _ CG_ Seg1		Obtrusive - Cd Obtrusive - Cd				
Parts R4 no SSD_Cd_Seg3	Parrs Rd - No 27_Cd_Seg7	Obtrusive - Cd	N.A.	2082	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Parts Rd. 10.550   Cd. Seg6	Parrs Rd - No 55D_Cd_Seg2	Obtrusive - Cd		4393		
Parts Rd No 550 Cd Segif						
Parts Rd. No. 550_Cd. Seg1	Parrs Rd - No 55D_Cd_Seg5	Obtrusive - Cd	N.A.	4483	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Paris Rd. No. 56_Cd_Seg1			_		Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Paris Rd. No. 85 (G. Seg4)  Obtusive - Cd. N.A. 1868  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg5)  Obtusive - Cd. N.A. 1764  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg1)  Obtusive - Cd. N.A. 1764  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg1)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg1)  Obtusive - Cd. N.A. 1567  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg3)  Obtusive - Cd. N.A. 1568  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg4)  Obtusive - Cd. N.A. 1568  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg4)  Obtusive - Cd. N.A. 1568  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg4)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg5)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg6)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg6)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg6)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg6)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Paris Rd. No. 85 (G. Seg6)  Obtusive - Cd. N.A. 1564  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Nasimum Luminous Intensity of 1,000 of (Zone A2 curfew hours)  Nasimum Luminous Intensity of 1,000 of					Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Parrs R4 - No 59 Cd Seg1	Parrs Rd - No 58_Cd_Seg3	Obtrusive - Cd	N.A.	1868	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Parrs R4 - No 59 _Cd _Seg1						
Parts R4. No. 92, Cd. Seg2 Obtrusive - Cd NA. 2184 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg4 Obtrusive - Cd NA. 2146 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2144 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 1617 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 1617 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2104 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2204 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Parts R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2202 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2202 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2434 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2433 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2443 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2443 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2443 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 2443 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 1447 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 1447 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters R4. No. 95, Cd. Seg6 Obtrusive - Cd NA. 1450 Maximum Luminous Intensity of 1,00	Parrs Rd - No 59_Cd_Seg1	Obtrusive - Cd		1544	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2146  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1617  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1755  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1755  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1755  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2092  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2092  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2092  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2092  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2483  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2483  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2483  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2483  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2483  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 2474  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1602  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1602  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1602  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Parrs Rd - No 59_Cd_Seg6  Obtrusive - Cd NA. 1602  Maximu	Parrs Rd - No 59_Cd_Seg2					
Parrs R4 - No 59 _Cd Seg5	Parrs Rd - No 59_Cd_Seg3				Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Parts R4 - No 59_Cd_Seg9	Parrs Rd - No 59_Cd_Seg5					
Parrs Rd. No. 99 Cd. Seg9						
Sangsters Rd - No 09_ Cd_ Seg1  Obtrusive - Cd	Parrs Rd - No 59_Cd_Seg8	Obtrusive - Cd	N.A.	1755	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 99 Cd Segd						
Sangsters Rd - No 09 Cd Seg4 Obtrusive - Cd NA 1247 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 09 Cd Seg6 Obtrusive - Cd NA 2006 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 09 Cd Seg7 Obtrusive - Cd NA 1902 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg1 Obtrusive - Cd NA 1902 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg1 Obtrusive - Cd NA 1902 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg1 Obtrusive - Cd NA 1901 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg1 Obtrusive - Cd NA 1801 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg2 Obtrusive - Cd NA 1801 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg3 Obtrusive - Cd NA 1523 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg4 Obtrusive - Cd NA 1523 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1558 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1565 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1565 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1585 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1985 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1985 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1985 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1986 Obtrusive - Cd NA 1986 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1986 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1986 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1986 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1986 Sangsters Rd - No 11 Cd Seg6 Obtrusive - Cd NA 1986 Sangsters Rd - No 15 Cd Seg1 Obtrusive - Cd NA 1986 Sangsters Rd - No 15 Cd Seg1 Obtrusive - Cd NA 1986 Sangsters Rd - No 15 Cd Seg1 Obtrusive -					Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 09 Cd Seg8         Obtrusive - Cd         N.A.         2006         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg1         Obtrusive - Cd         N.A.         1902         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg1         Obtrusive - Cd         N.A.         1102         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg2         Obtrusive - Cd         N.A.         64         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg3         Obtrusive - Cd         N.A.         1801         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg4         Obtrusive - Cd         N.A.         1801         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1805         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1805         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1805         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 11 Cd Seg6 <td< td=""><td>Sangsters Rd - No 09_Cd_Seg4</td><td>Obtrusive - Cd</td><td>N.A.</td><td>2483</td><td>Maxim</td><td>num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)</td></td<>	Sangsters Rd - No 09_Cd_Seg4	Obtrusive - Cd	N.A.	2483	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 11 Cd Seg1  Obtrusive - Cd NA 1902  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg1  Obtrusive - Cd NA 1801  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg2  Obtrusive - Cd NA 1801  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg3  Obtrusive - Cd NA 1523  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg4  Obtrusive - Cd NA 1523  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg5  Obtrusive - Cd NA 1565  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg6  Obtrusive - Cd NA 1566  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg6  Obtrusive - Cd NA 1566  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg6  Obtrusive - Cd NA 1578  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg6  Obtrusive - Cd NA 1578  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg6  Obtrusive - Cd NA 1595  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg8  Obtrusive - Cd NA 1595  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 11 Cd Seg8  Obtrusive - Cd NA 1595  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 15 Cd Seg1  Obtrusive - Cd NA 1596  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 15 Cd Seg1  Obtrusive - Cd NA 1596  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 15 Cd Seg3  Obtrusive - Cd NA 1596  Obtrusive - Cd NA 1596  Obtrusive - Cd NA 1596  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Sangsters Rd - No 15 Cd Seg3  Obtrusive - Cd NA 1596						
Sangsters Rd - No 11 Cd Seg 1  Obtrusive - Cd N.A. 1801 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 3  Obtrusive - Cd N.A. 1523 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 3  Obtrusive - Cd N.A. 1523 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 5  Obtrusive - Cd N.A. 1565 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 6  Obtrusive - Cd N.A. 1565 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 7  Obtrusive - Cd N.A. 1565 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 8  Obtrusive - Cd N.A. 1578 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 8  Obtrusive - Cd N.A. 1593 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 8  Obtrusive - Cd N.A. 1593 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg 9  Obtrusive - Cd N.A. 1593 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15 Cd Seg 1  Obtrusive - Cd N.A. 1593 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15 Cd Seg 2  Obtrusive - Cd N.A. 1596 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15 Cd Seg 3  Obtrusive - Cd N.A. 1596 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25 Cd Seg 2  Obtrusive - Cd N.A. 1598 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25 Cd Seg 2  Obtrusive - Cd N.A. 1598 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25 Cd Seg 3  Obtrusive - Cd N.A. 1598 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43 Cd Seg 3  Obtrusive - Cd N.A. 12085 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43 Cd Seg 3  Obtrusiv	Sangsters Rd - No 09_Cd_Seg7	Obtrusive - Cd	N.A.	1902	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
sangsters Rd - No 11 Cd Seg3         Obtrusive - Cd         N.A.         1523         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg4         Obtrusive - Cd         N.A.         1528         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1558         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11 Cd Seg6         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd Seg1         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd Seg1         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd Seg1         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd Seg3         Obtrusive - Cd         N.A.         1578         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew ho	Sangsters Rd - No 11_Cd_Seg10	Obtrusive - Cd	N.A.	1801	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 11_Cd_Seg4						
Sangsters Rd - No 11_Cd_Seg6  Obtrusive - Cd NA 1578  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11_Cd_Seg7  Obtrusive - Cd NA 1593  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11_Cd_Seg8  Obtrusive - Cd NA 1593  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 11_Cd_Seg9  Obtrusive - Cd NA 1593  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 15_Cd_Seg1  Obtrusive - Cd NA 1926  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 15_Cd_Seg2  Obtrusive - Cd NA 1926  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 15_Cd_Seg2  Obtrusive - Cd NA 1926  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 15_Cd_Seg3  Obtrusive - Cd NA 1474  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 25_Cd_Seg1  Obtrusive - Cd NA 1350  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 25_Cd_Seg3  Obtrusive - Cd NA 2076  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 25_Cd_Seg3  Obtrusive - Cd NA 2076  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg1  Obtrusive - Cd NA 2076  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg1  Obtrusive - Cd NA 1095  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg3  Obtrusive - Cd NA 1095  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg3  Obtrusive - Cd NA 1095  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg3  Obtrusive - Cd NA 1095  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg3  Obtrusive - Cd NA 1095  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Sangsters Rd - No 35_Cd_Seg3  Obtrusive - Cd NA 1095  Maximum Luminous Int	Sangsters Rd - No 11_Cd_Seg4	Obtrusive - Cd	N.A.	0	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
sangsters Rd - No 11, Cd, Seg7         Obtrusive - Cd         N.A.         1495         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 11, Cd, Seg9         Obtrusive - Cd         N.A.         1495         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd, Seg1         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd, Seg2         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd, Seg3         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd, Seg3         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 15, Cd, Seg3         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25, Cd, Seg3         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25, Cd, Seg3         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43, Cd, Seg1         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43, Cd, Seg3         Obtrusive - Cd         N.A.         1938         Maximum Luminous Intensity of 1,000 cd						
Sangsters Rd - No 11, Cd_ Seg9	Sangsters Rd - No 11_Cd_Seg7	Obtrusive - Cd	N.A.	1495	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
sangsters Rd - No 15, Cd, Seg2         Obtrusive - Cd         N.A.         2003         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 25, Cd, Seg1         Obtrusive - Cd         N.A.         1350         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 25, Cd, Seg1         Obtrusive - Cd         N.A.         1350         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 25, Cd, Seg3         Obtrusive - Cd         N.A.         2076         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg1         Obtrusive - Cd         N.A.         2076         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg2         Obtrusive - Cd         N.A.         2076         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg3         Obtrusive - Cd         N.A.         17292         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg4         Obtrusive - Cd         N.A.         1735         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angelers Rd - No 43, Cd, Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2	Sangsters Rd - No 11_Cd_Seg9	Obtrusive - Cd	N.A.	1014	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
sangsters Rd - No 15_Cd_Seg3         Obtrusive - Cd         N.A.         1744         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25_Cd_Seg1         Obtrusive - Cd         N.A.         1745         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25_Cd_Seg2         Obtrusive - Cd         N.A.         2033         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 25_Cd_Seg3         Obtrusive - Cd         N.A.         2076         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg3         Obtrusive - Cd         N.A.         12095         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg3         Obtrusive - Cd         N.A.         12922         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg4         Obtrusive - Cd         N.A.         1755         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg4         Obtrusive - Cd         N.A.         1775         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg5         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg6         Obtrusive - Cd         N.A.         3178         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) sangsters Rd - No 43_Cd_Seg7         Obtrusive - Cd         N.A.         3178         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hour						
Sangsters Rd - No 25_Cd_Seg2	Sangsters Rd - No 15_Cd_Seg3	Obtrusive - Cd	N.A.	1744	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
singsters Rd - No 25_ Cd_ Seg3         Obtrusive - Cd         N.A.         2076         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg2         Obtrusive - Cd         N.A.         2105         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg3         Obtrusive - Cd         N.A.         13175         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg4         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg5         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 43_ Cd_ Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 819_ Cd_ Seg7         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 819_ Cd_ Seg4         Obtrusive - Cd         N.A.         376         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angeters Rd - No 819_ Cd_ Seg4         Obtrusive - Cd         N.A.         54121         Maximum Luminous Intensity of 1,000 cd (Zone	sangsters Rd - No 25_Cd_Seg1 Sangsters Rd - No 25_Cd_Seg2					
Sangsters Rd - No 43_Cd_Seg2         Obtrusive - Cd         N.A.         12922         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 43_Cd_Seg3         Obtrusive - Cd         N.A.         3175         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 43_Cd_Seg5         Obtrusive - Cd         N.A.         10         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 43_Cd_Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 43_Cd_Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Sangsters Rd - No 43_Cd_Seg7         Obtrusive - Cd         N.A.         3255         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg1         Obtrusive - Cd         N.A.         576         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg3         Obtrusive - Cd         N.A.         54121         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg4         Obtrusive - Cd         N.A.         53877         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg	Sangsters Rd - No 25_Cd_Seg3	Obtrusive - Cd	N.A.	2076	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
sangsters Rd - No 43_Cd_Seg4         Obtrusive - Cd         N.A.         0         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angsters Rd - No 43_Cd_Seg5         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angsters Rd - No 43_Cd_Seg6         Obtrusive - Cd         N.A.         5018         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) angsters Rd - No 43_Cd_Seg7         Obtrusive - Cd         N.A.         3235         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hours? bloney Creek Rd - No 819_Cd_Seg1         Obtrusive - Cd         N.A.         54121         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hours? bloney Creek Rd - No 819_Cd_Seg2         Obtrusive - Cd         N.A.         54121         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hours? bloney Creek Rd - No 819_Cd_Seg3         Obtrusive - Cd         N.A.         55877         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hours? bloney Creek Rd - No 819_Cd_Seg4         Obtrusive - Cd         N.A.         55877         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hours? bloney Creek Rd - No 819_Cd_Seg5         Obtrusive - Cd         N.A.         48335         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hours? bloney Creek Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         48767         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) hoursy creek Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         53492	Sangsters Rd - No 43_Cd_Seg2	Obtrusive - Cd	N.A.	12922	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 43_Cd_Seg5         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 43_Cd_Seg6         Obtrusive - Cd         N.A.         3176         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 43_Cd_Seg7         Obtrusive - Cd         N.A.         3235         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg2         Obtrusive - Cd         N.A.         676         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg2         Obtrusive - Cd         N.A.         54121         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg3         Obtrusive - Cd         N.A.         53877         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg4         Obtrusive - Cd         N.A.         53877         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         48767         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg7         Obtrusive - Cd         N.A.         48767         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         53492         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) and sangsters Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         53492         Maximum						
Sangsters Rd No 43_Cd_Seg7	angsters Rd - No 43_Cd_Seg5	Obtrusive - Cd	N.A.	3176	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Stoney Creek Rd - No 819_Cd Seg1	Sangsters Rd - No 43_Cd_Seg6 Sangsters Rd - No 43_Cd_Seg7					
Stoney Creek Rd - No 819_Cd Seg3	Stoney Creek Rd - No 819_Cd_Seg1	Obtrusive - Cd	N.A.	676	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Stoney Creek Rd - No 819_Cd_Seg4         Obtrusive - Cd         N.A.         53877         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg5         Obtrusive - Cd         N.A.         4835         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         48767         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg8         Obtrusive - Cd         N.A.         53492         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg8         Obtrusive - Cd         N.A.         5602         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 821_Cd_Seg1         Obtrusive - Cd         N.A.         62277         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)						
Stoney Creek Rd - No 819_Cd_Seg6         Obtrusive - Cd         N.A.         48767         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg7         Obtrusive - Cd         N.A.         53492         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 819_Cd_Seg8         Obtrusive - Cd         N.A.         5692         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)           Stoney Creek Rd - No 821_Cd_Seg1         Obtrusive - Cd         N.A.         562277         Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)	Stoney Creek Rd - No 819_Cd_Seg4	Obtrusive - Cd	N.A.	53877	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Stoney Creek Rd - No 819_Cd_Seg8 Obtrusive - Cd N.A. 55602 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours) Stoney Creek Rd - No 821_Cd_Seg1 Obtrusive - Cd N.A. 62277 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)	Stoney Creek Rd - No 819_Cd_Seg6	Obtrusive - Cd	N.A.	48767	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Stoney Creek Rd - No 821_Cd_Seg1 Obtrusive - Cd N.A. 62277 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)	Stoney Creek Rd - No 819_Cd_Seg7	Obtrusive - Cd			Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Stoney Creek Rd - No 821_Cd_Seg2   Obtrusive - Cd   N.A.   0   Maximum Luminous Intensity of 1.000 cd (Zone A2 curfew hours)	Stoney Creek Rd - No 821_Cd_Seg1	Obtrusive - Cd	N.A.	62277	Maxim	num Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Stoney Creek Rd - No 821_Cd_Seg3 Obtrusive - Cd N.A. 62891 Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)						

#### GLARE CALCULATION RESULTS - SE AND SW PROPERTIES

AS/NZS4282:2019 Control of Obtrusive Lighting Effects -	Calculation Summary	- Glare		
Label	CalcType	Units	Max	Description
Clevely Line - No 163_Cd_Seg1	Obtrusive - Cd	N.A.	15253	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Clevely Line - No 163_Cd_Seg2	Obtrusive - Cd	N.A.	15283	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Clevely Line - No 163_Cd_Seg3	Obtrusive - Cd	N.A.	16440	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Clevely Line - No 163_Cd_Seg4	Obtrusive - Cd	N.A.	16764	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Clevely Line - No 163_Cd_Seg5	Obtrusive - Cd	N.A.	17602	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Clevely Line - No 163_Cd_Seg6	Obtrusive - Cd	N.A.	18239	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Clevely Line - No 163_Cd_Seg7	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg1	Obtrusive - Cd	N.A.	49131	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg2	Obtrusive - Cd	N.A.	49079	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg3	Obtrusive - Cd	N.A.	5505	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg4	Obtrusive - Cd	N.A.	49053	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg5	Obtrusive - Cd	N.A.	5406	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg6	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Railway Rd - No 422_Cd_Seg7	Obtrusive - Cd	N.A.	5273	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg1	Obtrusive - Cd	N.A.	2283	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg2	Obtrusive - Cd	N.A.	3346	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg3	Obtrusive - Cd	N.A.	2253	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg4	Obtrusive - Cd	N.A.	3257	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg5	Obtrusive - Cd	N.A.	3108	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg6	Obtrusive - Cd	N.A.	3074	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 761_Cd_Seg7	Obtrusive - Cd	N.A.	31745	
Roberts Line - No 771_Cd_Seg1	Obtrusive - Cd	N.A.		Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 771_Cd_Seg10 Roberts Line - No 771_Cd_Seg11	Obtrusive - Cd Obtrusive - Cd	N.A.	20144 2611	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 7/1_Cd_Seg11 Roberts Line - No 771_Cd_Seg2	Obtrusive - Cd	N.A.	30531	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Roberts Line - No 771_Cd_Seg2  Roberts Line - No 771_Cd_Seg3	Obtrusive - Cd	N.A.	26214	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Roberts Line - No 771_Cd_Seg4	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Roberts Line - No 771_Cd_Seg4	Obtrusive - Cd	N.A.	25816	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Roberts Line - No 771_Cd_Seg6	Obtrusive - Cd	N.A.	20234	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 771_Cd_Seg7	Obtrusive - Cd	N.A.	2658	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 771_Cd_Seg8	Obtrusive - Cd	N.A.	19900	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 771_Cd_Seg9	Obtrusive - Cd	N.A.	2720	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg1	Obtrusive - Cd	N.A.	2604	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg2	Obtrusive - Cd	N.A.	2608	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg3	Obtrusive - Cd	N.A.	2614	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg4	Obtrusive - Cd	N.A.	124	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg5	Obtrusive - Cd	N.A.	2623	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg6	Obtrusive - Cd	N.A.	2627	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg7	Obtrusive - Cd	N.A.	2450	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 787_Cd_Seg8	Obtrusive - Cd	N.A.	2608	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 803_Cd_Seg1	Obtrusive - Cd	N.A.	2443	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 803_Cd_Seg2 Roberts Line - No 803_Cd_Seg3	Obtrusive - Cd Obtrusive - Cd	N.A.	165 2451	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 803_Cd_Seg3	Obtrusive - Cd	N.A.	2451	Maximum Luminous Intensity of 1,000 cd (Zone AZ curiew hours)  Maximum Luminous Intensity of 1,000 cd (Zone AZ curiew hours)
Roberts Line - No 803_Cd_Seg5	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Roberts Line - No 803_Cd_Seg6	Obtrusive - Cd	N.A.	2441	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 814_Cd_Seg1	Obtrusive - Cd	N.A.	226	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 814_Cd_Seg2	Obtrusive - Cd	N.A.	1	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 814_Cd_Seg3	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 814_Cd_Seg4	Obtrusive - Cd	N.A.	1	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824_Cd_Seg1	Obtrusive - Cd	N.A.	323	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824_Cd_Seg2	Obtrusive - Cd	N.A.	311	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824_Cd_Seg3	Obtrusive - Cd	N.A.	311	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824_Cd_Seg4	Obtrusive - Cd	N.A.	1	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824A_Cd_Seg1	Obtrusive - Cd	N.A.	457	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824A_Cd_Seg10	Obtrusive - Cd	N.A.	448	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824A_Cd_Seg11 Roberts Line - No 824A_Cd_Seg2	Obtrusive - Cd Obtrusive - Cd	N.A.	0 453	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
	Obtrusive - Cd	N.A.	453	Maximum Luminous Intensity of 1,000 cd (Zone AZ curiew nours)
Roberts Line - No 824A_Cd_Seg3 Roberts Line - No 824A_Cd_Seg4	Obtrusive - Cd	N.A.	449	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824A_Cd_Seg5	Obtrusive - Cd	N.A.	383	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Roberts Line - No 824A_Cd_Seg6	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Roberts Line - No 824A_Cd_Seg7	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824A_Cd_Seg8	Obtrusive - Cd	N.A.	384	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Roberts Line - No 824A_Cd_Seg9	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 73_Cd_Seg1	Obtrusive - Cd	N.A.	56094	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 73_Cd_Seg2	Obtrusive - Cd	N.A.	56201	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 73_Cd_Seg3	Obtrusive - Cd	N.A.	56067	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 73_Cd_Seg4	Obtrusive - Cd	N.A.	54953	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 73_Cd_Seg5	Obtrusive - Cd	N.A.	5067	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg1	Obtrusive - Cd	N.A.	52289	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg2	Obtrusive - Cd	N.A.	4822	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg3	Obtrusive - Cd	N.A.	52377	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg4	Obtrusive - Cd	N.A.	5236	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg5	Obtrusive - Cd	N.A.	1996	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg6	Obtrusive - Cd	N.A.	5147	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg7	Obtrusive - Cd	N.A.	2527 4836	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 91_Cd_Seg8 Sangsters Rd - No 95_Cd_Seg1	Obtrusive - Cd Obtrusive - Cd	N.A.	4836 52092	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Sangsters Rd - No 95_Cd_Seg1 Sangsters Rd - No 95_Cd_Seg2	Obtrusive - Cd	N.A.	52092	Maximum Luminous Intensity of 1,000 cd (Zone AZ currew hours)  Maximum Luminous Intensity of 1,000 cd (Zone AZ currew hours)
Sangsters Rd - No 95_Cd_Seg2 Sangsters Rd - No 95_Cd_Seg3	Obtrusive - Cd	N.A.	5116	Maximum Luminous Intensity of 1,000 cd (Zone AZ curiew hours)  Maximum Luminous Intensity of 1,000 cd (Zone AZ curiew hours)
Sangsters Rd - No 95_Cd_Seg4	Obtrusive - Cd	N.A.	49565	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Sangsters Rd - No 95_Cd_Seg5	Obtrusive - Cd	N.A.	5136	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Tutaki Rd - No 428_Cd_Seg1	Obtrusive - Cd	N.A.	6048	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Tutaki Rd - No 428_Cd_Seg2	Obtrusive - Cd	N.A.	7594	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Tutaki Rd - No 428_Cd_Seg3	Obtrusive - Cd	N.A.	3087	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)

#### GLARE CALCULATION RESULTS - NW PROPERTIES

AS/NZS4282:2019 Control of Obtrusive Lighting Effe			T.M.	Description
Label	CalcType	Units N A	Max	Description
Maple St - No 01_Cd_Seg1 Maple St - No 01_Cd_Seg2	Obtrusive - Cd Obtrusive - Cd	N.A.	59316	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01_Cd_Seg2  Maple St - No 01_Cd_Seg3	Obtrusive - Cd	N.A.	0 29316	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Maple St - No 01_Cd_Seg3	Obtrusive - Cd	N.A.	59589	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
	Obtrusive - Cd	N.A.	59602	
Maple St - No 01_Cd_Seg5				Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01_Cd_Seg6	Obtrusive - Cd	N.A.	59523	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg1	Obtrusive - Cd	N.A.	302	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg2	Obtrusive - Cd	N.A.		Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg3	Obtrusive - Cd	N.A.	640	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg4	Obtrusive - Cd	N.A.	295	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg5	Obtrusive - Cd	N.A.	59980	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg6	Obtrusive - Cd	N.A.	60476	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg7	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 01A_Cd_Seg8	Obtrusive - Cd	N.A.	60402	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 03_Cd_Seg1	Obtrusive - Cd	N.A.	60746	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 03_Cd_Seg2	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 03_Cd_Seg3	Obtrusive - Cd	N.A.	60898	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 03_Cd_Seg4	Obtrusive - Cd	N.A.	61053	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 03_Cd_Seg5	Obtrusive - Cd	N.A.	61003	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 07_Cd_Seg1	Obtrusive - Cd	N.A.	62321	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 07_Cd_Seg2	Obtrusive - Cd	N.A.	62340	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 07A_Cd_Seg1	Obtrusive - Cd	N.A.	62369	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 07A_Cd_Seg2	Obtrusive - Cd	N.A.	62516	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 09_Cd_Seg1	Obtrusive - Cd	N.A.	63307	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Maple St - No 09_Cd_Seg2	Obtrusive - Cd	N.A.	63348	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Maple St - No 09A (2 Storey)_Cd_Seg1	Obtrusive - Cd	N.A.	61120	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Maple St - No 09A (2 Storey)_Cd_Seg1  Maple St - No 09A (2 Storey)_Cd_Seg2	Obtrusive - Cd	N.A.	61196	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew nours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Maple St - No 09A (2 Storey)_Cd_Seg3	Obtrusive - Cd	N.A.	61357	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_Cd_Seg4	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_Cd_Seg5	Obtrusive - Cd	N.A.	61799	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 09A (2 Storey)_Cd_Seg6	Obtrusive - Cd	N.A.	61836	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 11_Cd_Seg1	Obtrusive - Cd	N.A.	63919	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 11_Cd_Seg2	Obtrusive - Cd	N.A.	63726	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 11A_Cd_Seg1	Obtrusive - Cd	N.A.	62083	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 11A_Cd_Seg2	Obtrusive - Cd	N.A.	62136	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 13_Cd_Seg1	Obtrusive - Cd	N.A.	61117	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 13_Cd_Seg2	Obtrusive - Cd	N.A.	62747	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 15_Cd_Seg1	Obtrusive - Cd	N.A.	59856	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 15_Cd_Seg2	Obtrusive - Cd	N.A.	61052	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 17_Cd_Seg1	Obtrusive - Cd	N.A.	60723	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 17_Cd_Seg2	Obtrusive - Cd	N.A.	58125	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 19_Cd_Seg1	Obtrusive - Cd	N.A.	1076	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 19 Cd Seg2	Obtrusive - Cd	N.A.	56636	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
	Obtrusive - Cd	N.A.	54937	
Maple St - No 19_Cd_Seg3				Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 21_Cd_Seg1	Obtrusive - Cd	N.A.	54481	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 21_Cd_Seg2	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 21_Cd_Seg3	Obtrusive - Cd	N.A.	54551	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 21_Cd_Seg4	Obtrusive - Cd	N.A.	54988	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg1	Obtrusive - Cd	N.A.	61296	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg2	Obtrusive - Cd	N.A.	61412	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg3	Obtrusive - Cd	N.A.	61182	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg4	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg5	Obtrusive - Cd	N.A.	61532	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg6	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 5 (2 Storey)_Cd_Seg7	Obtrusive - Cd	N.A.	61925	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 57 Cd Seg1	Obtrusive - Cd	N.A.	989	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 57_Cd_Seg2	Obtrusive - Cd	N.A.	22251	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 57_Cd_Seg3	Obtrusive - Cd	N.A.	996	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Maple St - No 57_Cd_Seg4	Obtrusive - Cd	N.A.	21048	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Maple St - No 57_Cd_Seg5	Obtrusive - Cd	N A	5848	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg1	Obtrusive - Cd	N.A.	3824	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
	Obtrusive - Cd	N.A.	3497	
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg10 Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg11	Obtrusive - Cd	N.A.	400	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)  Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
To Nacio Dd. No 244 (2 Storey)_C0_Seg 11	Obtrusive - Cd	N.A.	3334	
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg12				Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg13	Obtrusive - Cd	N.A.	239	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg14	Obtrusive - Cd	N.A.	3320	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg2	Obtrusive - Cd	N.A.	3704	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg3	Obtrusive - Cd	N.A.	3657	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg4	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg5	Obtrusive - Cd	N.A.	3693	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg6	Obtrusive - Cd	N.A.	3553	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg7	Obtrusive - Cd	N.A.	190	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg8	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 241 (2 Storey)_Cd_Seg9	Obtrusive - Cd	N.A.	251	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 242_Cd_Seg1	Obtrusive - Cd	N.A.	1932	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 242_Cd_Seg2	Obtrusive - Cd	N.A.	1892	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 242_Cd_Seg3	Obtrusive - Cd	N.A.	1489	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 242_Cd_Seg4	Obtrusive - Cd	N.A.	0	Maximum Luminous Intensity of 1,000 cd (Zone A2 curiew hours)
Te Ngaio Rd - No 242_Cd_Seg5	Obtrusive - Cd	N.A.	1484	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Te Ngaio Rd - No 242_Cd_Seg5 Te Ngaio Rd - No 245_Cd_Seg1	Obtrusive - Cd	N.A.	3970	Maximum Luminous Intensity of 1,000 cd (Zone A2 currew hours)
Te Ngaio Rd - No 245 Cd Seg2	Obtrusive - Cd	N.A.	3961	
				Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 245_Cd_Seg3	Obtrusive - Cd Obtrusive - Cd	N.A. N.A.	3783	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
		I IN.A.	3///	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)
Te Ngaio Rd - No 245_Cd_Seg4 Te Ngaio Rd - No 245_Cd_Seg5	Obtrusive - Cd	N.A.	1276	Maximum Luminous Intensity of 1,000 cd (Zone A2 curfew hours)

### SPILL LIGHT NOTES

- ACCORDING TO AS/NZS 4282:2019 (CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING) THE FREIGHT HUB IS WITHIN ZONE A2 (SPARSELY INHABITED RURAL / SEMI-RURAL AREAS WITH LOW DISTRICT BRIGHTNESS) WHERE THE GLARE (MAXIMUM LUMINOUS INTENSITY PER LUMINAIRE - cd) (ON THE FRONT FACES OF RESIDENTIAL BUILDINGS CONTAINING WINDOWS) IS NOT PERMITTED TO EXCEED 1,000 cd DURING CURFEW HOURS (BETWEEN 11pm AND 6am). DURING NON-CURFEW HOURS THIS LIMIT INCREASES TO 7,500 cd.

  ONLY THE CLOSEST RESIDENTIAL BUILDINGS SURROUNDING THE PROPOSED RAIL FREIGHT HUB SITE WERE CONSIDERED AND THE
- CALCULATION RESULTS INDICATE THAT THE 1,000 cd (GLARE) LIMIT WILL BE EXCEEDED AT A NUMBER OF PROPERTIES. THE EXISTING TREES AND VEGETATION (BETWEEN THE PROPERTIES AND RAIL FREIGHT HUB) WERE INCLUDED IN THE CALCULATIONS USING THE STANDARD OBJECT LIBRARY WITHIN THE LIGHTING SOFTWARE (AGi32). USING THE AGi32 TREE OBJECTS (FROM THE STANDARD LIBRARY) IS ONLY AN APPROXIMATION OF THE LIKELY EFFECTS THAT THE EXISTING TREES AND VEGETATION MAY HAVE ON THE CALCULATION RESULTS.
- TO MITIGATE THE NON-COMPLIANT GLARE LEVELS PROPRIETARY GLARE SHIELDS MAY NEED TO BE FITTED TO THE LUMINAIRES AND/OR THE LUMINAIRE ORIENTATION (AIMING ANGLES/TILTS) MAY NEED TO BE ADJUSTED. SOME FORM OF GLARE MITIGATION SHOULD BE IMPLEMENTED DURING DETAILED DESIGN.

NOTE: REFER TO FIG: 200 FOR LIGHTING LEGEND, NOTES AND EQUIPMENT SCHEDULE



KIWIRAIL HUB SITE 3-G2 LIGHTING **GLARE CALCULATIONS** 

Drawn By: IAN CAMPBELL AS SHOWN

FIG: 211

Job No: 310003007